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ROENTGEN THERAPY FOR BRONCHIECTASIS

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In a preliminary report one of us[1] reported the effectual use of roentgen therapy for bronchiectasis in a case of chronic bronchiectasis. Here we report our successful experience in thirty cases of chronic bronchiectasis in which roentgen therapy was employed.

ROENTGEN THERAPY IN BRONCHIECTASIS

Roentgen therapy has been employed for a great and protean variety of pulmonary inflammatory diseases. The literature is voluminous on the subjects of roentgen therapy for pulmonary tuberculosis, "postoperative pneumonia," "unresolved pneumonia," "chronic pulmonary suppuration," pertussis, asthma and chronic bronchitis.[2] Under the obscure headings of "chronic pulmonary suppuration" and "unresolved pneumonia," there were perhaps many cases of unidentified bronchiectasis. Roentgen therapy has been employed in small dosage by several authors for "unresolved pneumonia" and "chronic pulmonary suppuration" with varying and, for the most part, indifferent results. In all probability, many cases of unidentified bronchiectasis were previously included under those obscure headings. Experience many years ago in the radiotherapy department of the Mount Sinai Hospital with small dosage of roentgen therapy with so-called bronchiectasis demonstrated a total failure of effect. When the present work was begun the necessity of large dosage of roentgen therapy was stressed. Bronchiectasis, as it is now known, cannot be accurately or completely diagnosed without the use of bronchography and bronchoscopy.[3] Before the comparatively recent introduction of iodized oil, bronchography was not clinically feasible.[4] An accurate and unequivocal diagnosis of bronchiectasis is therefore a relatively recent accomplishment. It is perhaps for this reason that roentgen therapy has not been previously applied to the distinct entity of bronchiectasis. The deliberate and successful use of roentgen therapy in large dosage as the sole treatment of chronic secreting bronchiectasis has not, to our knowledge, been previously described or reported.

From the Mount Sinai Hospital.

1. Berck, Maurice: Radiotherapy for Bronchorrhea in Bronchiectasis, J. Mount Sinai Hosp. **1**: 98-100 (July-Aug.) 1934.
2. Desjardins, A. U.: Action of Roentgen Rays and Radium on Heart and Lungs: Experimental Data and Clinical Radiotherapy, Am. J. Roentgenol. **27**: 149 (Jan.), 303 (Feb.), 477 (March); **28**:127 (July), 271 (Aug.), 421 (Sept.), 562 (Oct.), 699 (Nov.) 1932.
3. Ballon, D. H., and Ballon, H. C.: Diagnosis of Bronchiectasis, Acta oto-laryng. **11**: 580, 1927.
4. Sicard, J. A., and Forestier, Jacques: Methode générale d'exploration radiologique par l'huile iodée, Bull. et mem. Soc. méd. d. hôp. de Paris **46**: 463 (March 17) 1922.

RATIONALE OF THE USE OF ROENTGEN THERAPY FOR CHRONIC BRONCHIECTASIS

The use of roentgen therapy in chronic inflammatory processes, although resting largely on an empirical footing, nevertheless has a scientific basis of considerable clinical and experimental evidence. It is well established that x-rays act initially and mainly on the leukocytic (particularly lymphocytic) infiltration, causing destruction of these extraordinarily sensitive cells with ensuing phagocytosis and connective tissue proliferation as the sequelae of the action of the rays. In subchronic and chronic inflammatory processes this pathologic sequence acts to bring about a "resolution" of the chronic lesion.[5]

The early investigators of the action of roentgen rays on various organs reported that the lungs were relatively invulnerable to the action of the rays. However, the recent introduction of apparatus capable of delivering shorter wavelengths and larger depth doses has demonstrated that, within certain limits, definite tissue reactions can be produced in the lungs. It was the thought that an analogy might be drawn between the salivary glands and the bronchial mucous glands in their reactions to roentgen rays that led initially to this work on their use in bronchiectasis. Exposure of the salivary glands to roentgen rays brings about a diminution verging on abolition of secretion. It was thought that if a comparable reaction could be induced in the bronchial mucosa of bronchiectatic areas a comparable diminution of the secretion, and hence expectoration, might be expected. However, that such an effect can be produced in the bronchial mucosa of human beings, although supported by some experimental work on animals,[6] is problematic and perhaps unlikely. It is perhaps more logical to assume that the results which have been obtained in chronic bronchiectasis, as far as our present knowledge of the known reaction of tissues to roentgen rays can teach us, are due to the action of the rays on chronic inflammatory processes.

PATHOLOGIC MANIFESTATIONS OF CHRONIC BRONCHIECTASIS

It is now accepted that the origin of bronchiectasis is based essentially on primary morphologic alterations of the bronchial wall. Extrabronchial pulmonary or pleural lesions probably play but a minor rôle in the causation of ectasia of the bronchi. Intrinsic bronchial disease must be present to bring about the weakening and destruction of elastic structure that permits the aerodynamic and hydrodynamic forces constantly acting on the bronchial lumen to operate to produce bronchiectasis. Regardless of the nature of the pulmonary

5. Desjardins, A. U.: Radiotherapy for Inflammatory Conditions, J. A. M. A. **98**: 401-408 (Feb. 7) 1931; footnote 2.
6. Desjardins,[2] Lüdin, M., and Werthemann, A.: Lungenveränderungen nach experimenteller Roentgenbestrahlung, Strahlentherapie **38**: 684-701, 1930.

disease, be it "measles pneumonia," streptococcic "influenzal" pneumonia or anaerobic pneumonitis; if bronchiectasis is a concomitant lesion or a sequel, the original disease was bronchopneumonia and the bronchiectasis has developed as the result of a series of pathologic events, originating in a bronchial lesion.

Once clinical symptomatic bronchiectasis has been established, pathologic examination of the bronchial tree reveals it to be the site of a chronic and subchronic bronchial and peribronchial inflammation. The mucosa of the dilated bronchi is either hypertrophic or atrophic. The epithelium may be intact, may have undergone mucoid degeneration or desquamation or may be replaced by stratified low cuboid, nonciliated or flat cells. The areas of hypertrophy may show a mucosa that is thickened, polypoid, infiltrated, velvety, granular or villous. The cellular infiltration involves not only the submucosa but also the deeper layers of the wall. This cellular infiltration is very dense and extends through the bronchial wall into the immediate peribronchial area. It is predominantly lymphocytic. This pathologic feature perhaps has an important bearing, as before mentioned, on the effect of radiation in chronic bronchiectasis. The cellular infiltrated mucosa may have been changed to fibrous tissue and atrophy of the mucous glands, elastic tissue and cartilage may have occurred. The diseased wall may have been finally transformed into a thin fibrous, chronic inflammatory membrane. Usually atrophic and hypertrophic changes occur together.[7]

Fig. 1.—Status after pneumonotomy for chronic lung abscess of right upper lobe and establishment of bronchocutaneous fistulas. Expectoration, from 8 to 12 ounces, with profuse, foul purulent drainage through fistulas.

Fig. 2.—Bronchogram showing dilated bronchi contiguous to drained chronic putrid lung abscess of right upper lobe.

Fig. 3.—Bronchogram showing status after roentgen therapy with reduction of expectoration from 12 ounces (foul) to 2 ounces (odorless) and very marked decrease in drainage. Showing constriction of previously dilated bronchi of right upper lobe. This result has been maintained for a follow-up period of three years.

THE CLINICAL APPLICATION OF ROENTGEN THERAPY

Based on the foregoing outlined concepts of the action of roentgen radiation on the chronic inflammatory bronchial and peribronchial lesions and the mucus secreting bronchial epithelium, roentgen therapy in large dosage was instituted in a series of cases of chronic secreting bronchiectasis. No acute cases or cases with recent onset were treated. It is of considerable importance to be certain that a patient is not suffering from an ordinary superimposed acute infection of the upper respiratory tract which is making otherwise "dry" dilatations "wet." It is well known that bronchiectasis may be characterized by spontaneous remissions and exacerbations with seasonal variations. Therefore all the patients subjected to treatment were previously observed over a period of many months at least and were known to have a chronic lesion with sustained high level of expectoration without spontaneous remissions. All the patients were rigorously investigated by means of bronchography and bronchoscopy, and the diagnosis of chronic bronchiectasis was thereby clearly established. The majority of the patients had been variously and unsuccessfully treated by bronchoscopic drainage and lavage, phrenic nerve operations and pneumothorax. They were treated finally by roentgen therapy as a last resort. The alternative in these patients was radical operative intervention such as lobectomy or pneumonectomy.

(*a*) *Diagnosis.*—It is of great importance to point out that chronic bronchiectasis is a diagnosis of exclusion. The term bronchiectasis, unless qualified, means a state of the bronchi—not a disease in the strict sense of the word. The diagnosis of bronchiectasis must be considered as incomplete and inaccurate unless one is able to diagnose the location of the disease (i. e., what lobe or lobes are involved) and the size and distribution of the dilatations. But of paramount importance it is necessary to ascertain the presence or absence of various local features such as pulmonary tuberculosis, pulmonary abscess, bronchial foreign body, bronchial adenoma and bronchial carcinoma. The diagnosis cannot be made on the clinical history alone, suggestive as this may be. A clinical picture suggestive of bronchiectasis must always be substantiated by comprehensive positive bronchography and bronchoscopy. The bronchogram must be bilateral and map out the main branches on both sides. Bronchoscopy must enable one to rule out the presence of foreign body and new growth and permit one to observe which bronchi are discharging and are the sources of expectoration.

It is necessary to point out here that the important therapeutic consideration is not the bronchial dilatation but whether it is "wet" or "dry." Our use of roentgen therapy is not directed to cause morphologic alterations of the dilated bronchial tree but is directed to render a "wet" bronchiectasis "dry"; to cause an arrest of the symptom of expectoration, which, when copious and foul, makes the patient an abhorrence to himself. It is well known that extensive "dry" bronchiectasis can be present for many years without attracting attention clinically. The disproportion between the clinical symptoms and the bronchial dilatation in such "dry" cases may be striking.

7. Graham, E. A.; Singer, J. J., and Ballon, H. C.: Surgical Diseases of the Chest, Philadelphia, Lea & Febiger, 1935, pp. 575-682.

(*b*) *Classification of Patients Given Roentgen Therapy.*—Roentgen therapy was not instituted in any patient who presented acute inflammatory symptoms. The presence of active pneumonitis was considered a contraindication to the therapy. Only those patients who were ambulatory, afebrile and presented a chronic lesion with a more or less constant level of expectoration, without marked remissions, were considered suitable for therapy.

Accordingly, roentgen therapy was instituted in three types of chronic secreting bronchiectasis, namely:

1. Bronchiectasis secondary to chronic putrid lung abscess and residual symptomatically after pneumonotomy for the chronic abscess. These cases usually presented a profuse mucopurulent discharge from one or more bronchocutaneous fistulas at the site of pneumonotomy. Expectoration, if present, was of the same character as the discharge and usually varied from 3 to 6 ounces daily. The area of bronchiectasis was usually fairly extensive, comprising the greater part of the affected lobe, and not infrequently was multilobar. There were fourteen patients in this group (table 1).

Fig. 4.—Bronchogram: Oblique view illustrating extensive bronchiectasis from apex to base of left side. The normal bronchi of the healthy right lung appear on the right side of the film. Expectoration of 16 ounces of foul sputum; marked clubbing of fingers. Duration of disease, ten years.

Fig. 5.—Bronchogram showing contracture and narrowing of previously dilated bronchial tree of left side. This occurred after roentgen therapy that had succeeded in reducing expectoration from 16 ounces (putrid) to 1 ounce (odorless), accompanied by loss of clubbing of fingers. This result has been maintained for a follow-up period of two years.

Fig. 6.—Bronchogram: Oblique view after therapy of same case, showing stricturing of dilated bronchi after treatment. Compare with figure 4.

2. The second type of case was characterized by a bronchographic picture of involvement of one or two lobes, daily expectoration of from 1 to 5 ounces of nonodorous sputum, a minor degree or absence of clubbing of the digits and a history of relatively infrequent episodes of hemoptysis and pneumonitis. These patients did not appear very ill clinically; they were ambulatory and usually had never required hospitalization. There were three patients in this group (table 2).

3. The third group of patients appeared chronically ill. They were characterized usually by multilobar extensive bronchiectasis, frequent distressing cough with the expectoration of large quantities of foul sputum. They usually exhibited marked clubbing of the digits and gave a history of frequent hemoptyses and attacks of pneumonitis. There were thirteen patients in this group (table 3).

(*c*) *Method of Treatment.*—To secure "control" to the effect of the treatment, absolutely no other form of therapy was used coincidentally.

The patients were treated ambulatorily, for the most part, reporting to the radiotherapy department as "out-patients." Roentgen therapy, in large dosage, was given to these patients over a period of approximately three months, all the diseased and secreting lobes (as revealed by thorough bronchography and bronchoscopy) being "cross-fired" through anterior, lateral and posterior fields. From three to seven fields were utilized as indicated. The average total dose used was approximately 1,200 roentgens through each of the anterior, lateral and posterior fields.

The physical factors of the technic are as follows: 180 to 200 kilovolts; focal skin distance, 50 cm.; current volume, 4 milliamperes; filter, 0.5 mm. of copper and 1 mm. of aluminum; size of field, 10 by 15 cm. Each treatment consisted of 75 roentgens, measured in air, to two or three fields.

The patients were treated usually two or three times a week. In bilateral cases one side (the most extensively diseased) was treated at a time, followed by the other side after the first course of roentgen therapy was finished. In a few of our earlier cases in which the dosage of roentgen therapy was inadequate and the result unsatisfactory, a second course was given after an interval of four months. It was found that at least four months must be allowed to elapse after a course of therapy had been given to secure the full measure of improvement. In future bilateral cases it is our impression that it would be of advantage to treat the two sides simultaneously.

No significant skin changes due to therapy have been observed. Two children under the age of 12 years have been treated successfully.

It is very important to note here that during the course of treatment the patient's symptoms are exacerbated, sometimes to a marked extent. A low grade fever is common, cough is more frequent, and expectoration is more profuse. This is explicable on the basis of the action of x-rays. In our series, four patients experienced episodes of pneumonitis, occurring during the course of therapy. Whether this can be ascribed to the action of the rays is conjectural. Hemoptysis may occur during the exacerbation of symptoms. This occurred in patients who had previously experienced bleeding. Hemoptysis is normally very common in bronchiectasis and is usually due to bleeding granu-

lations and ulcerations. The exacerbations of symptoms during roentgen therapy possibly may increase this tendency. Five of our patients bled noticeably during treatment. "Radiation sickness" may be experienced that requires symptomatic treatment. The secondary anemia that may occur is combated with large doses of iron. Aggravation of symptoms and "radiation sickness" may necessitate protraction of treatment beyond three months. It is only after approximately three fourths of the treatment has been finished that noticeable improvement begins to take place. This is gradual and progressive, signalized by decrease in cough and foul expectoration. This improvement progresses steadily from week to week and continues for a period of at least four months after cessation of treatment, with gradual diminution of symptoms amounting in some cases to practical abolition of cough and expectoration.

TABLE 1.—*Chronic Bronchiectasis Secondary to Chronic (Operated) Anaerobic Lung Abscess*

Case	Lobes Involved	Duration of Symptoms	Expectoration in Ounces	Drainage	Technic of Treatment and Its Duration: Fields	Roentgens	Days	Result on Expectoration and Drainage
1	Right upper lobe, right lower lobe	3 yrs.	6-8	Profuse	5 ×	1,200	97	2 oz. odorless sputum, less cough
2	Right upper lobe, right middle lobe, right lower lobe	7 yrs.	4-7	Profuse	3 ×	1,200	30	6 oz. sputum, moderate drainage, no change in condition
					3 ×	800		
3	Left lower lobe	1 mo.	1½-3	Fistula bleeding	3 ×	1,200	30	No expectoration or cough, fistula closed
4	Right upper lobe, right lower lobe	1 yr.	½-1½	Bleeding fistula	5 ×	800	40	Closed wound, slight bleeding, cough, expectoration
					2 ×	400		
5	Right upper lobe	2 yrs.	10-14	Profuse	3 ×	1,500	180	1-5 oz. sputum, slight drainage
6	Right lower lobe	1½ yrs.	1-5	Profuse	3 ×	800		
					5 ×	675	28	No drainage, cough, or expectoration
					5 ×	500		
					5 ×	2,000	180	
7	Right upper lobe	8 mos.	None	Profuse	3 ×	1,300	33	Closed wound, no cough
8	Left upper lobe, left lower lobe	½ yr.	.....	Moderate	3 ×	900	30	No cough, closed wound
9	Right upper lobe	½ yr.	4	Profuse	3 ×	1,350	90	No expectoration, slight drainage
10	Right upper lobe, right middle lobe, right lower lobe	4 yrs.	4	Moderate	3 ×	1,350	90	Death 3 months after treatment; only right lower lobe treated; cause of death unknown
11	Left upper lobe	4 yrs.	2-4	Moderate	3 ×	800	40	
					3 ×	1,200	30	No change in symptoms
12	Right lower lobe	6 yrs.	4	Profuse	3 ×	1,200	30	1-2 oz. sputum with bleeding; cured with excision of bronchial adenoma, right main bronchus
13	Right upper lobe	4 yrs.	5-7	Moderate	3 ×	800	120	No change in symptoms, another course of therapy now being given
					3 ×	1,150	90	
14	Right upper lobe	2 yrs.	.....	Moderate	3 ×	800	30	
					3 ×	800	60	No change in symptoms

	Number	Per Cent
Greatly improved	7	50
Moderately improved	2	14
Unimproved	4	28
Deaths	1	7
Total	14	

COMMENT ON RESULTS

Our statistical summary of results must be considered tentative in the sense that it is based on a relatively small number of cases (thirty). A numerical presentation at the present time can be but an approximation of the figures that will be registered when a much larger number of cases have been treated. The cases in this series were consecutive and unselected and represent our total experience to date. Several of the patients now reported as but "moderately" improved or "unimproved" have not yet received full treatment to the entire known area of secreting bronchiectasis or have received but one course of therapy with but partial results. We are nevertheless including these partially treated patients in our series to give a full picture of our total experience to date.

The improvement that has been obtained in chronic bronchiectasis as the result of roentgen therapy, while moderate in some instances, has been so striking and remarkable in others as to render patients practically cough and sputum free.

It is perhaps necessary to emphasize here that the only criterion of improvement that we have employed is decrease in expectoration. It is the sole intention of the therapy to render a secreting "wet" bronchiectasis "dry"; i. e., to secure a symptomatic clinical cessation of the main presenting features of the disease; namely, expectoration and cough. Those patients who have obtained great improvement in expectoration and cough and had experienced hemoptyses and episodes of pneumonitis in the past have been free from these attacks and episodes subsequent to treatment. Clubbing of the digits has surprisingly subsided in a number of cases that have been improved. Unfortunately, this regression of clubbing cannot be demonstrated photographically at present as it was unexpected, and photographs of the hands of the patients in this series prior to therapy were not taken. Such photographs of hands are now being taken in the oncoming series of patients and will be presented at a later date.

Those patients who have responded to roentgen therapy have sustained their improvement during their entire follow-up examination to date, in some cases consisting of a period of over two years. During this

period, infections of the upper respiratory tract have been experienced repeatedly and have been characterized by slight increase in odorless expectoration, but without recurrence of harassing cough and profuse foul expectoration.

CLASSIFICATION OF RESULTS

There were fourteen patients with chronic bronchiectasis secondary to chronic (operated) anaerobic lung abscess.[8] Five of the improved patients (table 1) have been followed for a period of approximately two years. They have maintained their improvement to date without recurrence of previous symptoms of profuse drainage through fistulas and profuse expectoration. The other cases are more recent. The death in this group occurred in a case in which all three lobes on the right side were involved in a chronic bronchiectasis secondary to a chronic anaerobic lung abscess. The daily expectoration was 4 ounces of foul sputum. Only partial treatment had been given (to the right lower lobe) and death occurred in another city three months after the last treatment to the right lower lobe. The cause of death could not be ascertained.

There were three patients with chronic bronchiectasis characterized by moderate amounts of nonfoul expectoration (table 2).

There were thirteen patients with chronic bronchiectasis characterized by profuse foul expectoration (table 3). These patients with multilobar bronchiectasis and profuse expectoration of large quantities of foul expectoration, although the most seriously ill, have experienced the greatest benefit and have shown the most striking results and remarkable improvement. In some of these patients the bronchiectasis involved an entire hemithorax from apex to base, and in some the lesion was bilateral. Reductions in daily expectoration from as high as 16 ounces to 1½ ounces have been accomplished with complete loss of foul odor. Cough, previously harassing, has been reduced to a short morning bout with an expectoration of approximately 1 ounce. Concomitant with their great symptomatic improvement, some of these patients have lost the clubbing of their fingers. The episodes of pneumonitis have not recurred.

It is noteworthy that this type of bronchiectasis presents a pathologic and clinical picture that is more markedly inflammatory in its nature than the other two groups of patients. The marked beneficial reaction of roentgen therapy in these patients could, with logic, be ascribed to the effect of roentgen therapy on chronic inflammatory processes, as noted in the previous section in which the action of roentgen rays is discussed. This impression of more marked benefit derived from the treatment may have been gained because this group of patients presented an intensity of symptoms greater than that present in the first two groups. Thus the abolition of foulness, the practical cessation of cough and profuse expectoration and the loss of clubbing were more obvious and striking. One of these patients,

TABLE 2.—*Odorless Bronchiectasis*

Case	Lobes Involved	Duration of Symptoms	Expectoration, Ounces	Treatment and Duration: Fields	Roentgens	Days	Results on Expectoration and Drainage
1	Left upper lobe, left lower lobe	10 yrs.	4	7 ×	1,500	72	1½-2 oz.; only left lower lobe treated
2	Left lower lobe	33 yrs.	2	3 ×	1,200	90	½-1 oz.; less cough
			4	3 ×	660	25	
3	Right upper lobe	7 yrs.	5	6 ×	1,000	60	No result

	Number	Per Cent
Greatly improved	1	33⅓
Moderately improved	1	33⅓
Unimproved	1	33⅓
Total	3	

TABLE 3.—*Foul Bronchiectasis*

Case	Lobes Involved	Duration of Symptoms	Expectoration, Ounces	Technic of Treatment and Duration: Fields	Roentgens	Days	Results on Expectoration and Cough
1	Left lower lobe	7 mos.	7	3 ×	1,125	34	No cough or expectoration
2	Left upper lobe, left lower lobe	10 yrs.	15-20	7 ×	1,200	90	Cough slight, 1½-2 oz. odorless
3	Right upper lobe, right middle lobe, right lower lobe	5 yrs.	7	5 ×	1,200	32	
				5 ×	1,500	94	1 oz. odorless
4	Right upper lobe, right middle lobe, right lower lobe	6 mos.	5-7	6 ×	1,200	70	Less cough, 2-3 oz. odorless
5	Right lower lobe	2 yrs.	10	3 ×	1,200	30	Death (pneumonitis, contralateral, after hemoptysis)
				3 ×	550		
6	Right lower lobe, left lower lobe	11 yrs.	4	3 ×	1,500	72	Left side treated only; no result; further therapy to right side to be given
7	Left upper lobe, left lower lobe	10 yrs.	8	3 ×	800 to left lower lobe	60	Death, three weeks after last treatment (cause unknown)
8	Left upper lobe, left lower lobe, right upper lobe, right lower lobe	12 yrs.	16	5 ×	900	40	
				5 ×	1,100	50	No result
9	Left lower lobe	3 yrs.	4-5	3 ×	1,500	70	1 oz. odorless
10	Five lobes	30 yrs.	3-4	Rt. 7 ×	1,100	60	
				Lt. 3 ×	1,100	50	½ oz.
11	Left lower lobe	1½ yrs.	6	6 × entire side	1,000	120	1½ oz. odorless
12	Left lower lobe	9 yrs.	8	3 ×	1,500	77	1½ oz. odorless
13	Five lobes	14 yrs.	4	3 ×	1,100	50	Only one side treated; no result

	Number	Per Cent
Greatly improved	7	53
Moderately improved	1	7
Unimproved	3	23
Deaths	2	14
Total	13	

8. We are indebted to Dr. Harold Neuhof for permission to treat this group of patients, who had been operated on in his surgical service at Mount Sinai Hospital.

expectorating 16 ounces of foul sputum daily for a period of ten years, has been rendered practically asymptomatic for a follow-up period of two years. There were two deaths in this group while under treatment. One death occurred in a patient with profuse expectoration due to bronchiectasis which involved an entire hemithorax. After one course of roentgen therapy to the entire affected hemithorax a reduction of expectoration from 10 ounces to 2 or 4 ounces with complete loss of foulness was accomplished. Clubbing of the digits was on the wane and considerable symptomatic improvement occurred. A second course of roentgen therapy was instituted to reduce the residual expectoration. During the second course of therapy the patient experienced a severe hemoptysis followed by an extensive bronchopneumonia of the opposite healthy side, from which he died. Necropsy was not obtained. The second death occurred in a case of bronchiectasis involving the left upper and lower lobes with 8 ounces of foul sputum. Before the course of therapy was completed death occurred in another city. The cause of death could not be ascertained.

The follow-up examination on the improved cases has revealed, thus far, no recurrence in profuse expectoration with repeated infections of the upper respiratory tract and no tendency to resume foul expectoration. These patients who have responded markedly to roentgen therapy are no longer an abhorrence to themselves and to others. They appear clinically quite well, arrested to all practical purposes of their previous symptoms. One of the most severe cases in which great improvement has been experienced (16 ounce expectoration reduced to 1 ounce) has been, as already noted, followed for over two years without recurrence. The other cases that have been followed are of more recent date (from three to eighteen months). All our patients have been followed personally and have been examined at frequent intervals.

ROENTGENOLOGIC ASPECTS

In some of the cases that have been treated successfully, post-therapy bronchography has shown alterations in the picture of the dilated bronchial tree. The bronchi that were definitely dilated (saccular and cylindric), which were exposed to roentgen therapy, appear narrowed and strictured throughout after treatment (figs. 3, 5 and 6). It may be reasonably conjectured that such a change is due to healing by scar tissue of the previously ulcerated diseased bronchial tree. The end result is a contracture and stenosis of the diseased dilated bronchi throughout the area of treatment. In other cases, post-therapy bronchography, as yet, has shown no alterations in caliber of the dilated (now "dry") bronchi. Further studies in this regard are being carried out and will be presented in a future report. The morphologic type and degree of the dilatations (cylindric or saccular) has had no demonstrable relationship to the results of roentgen therapy. Roentgenograms of the chest other than the aforementioned bronchographic changes have shown no alterations after roentgen therapy. No evidence of pleural thickening, pulmonary fibrosis or mediastinal retraction has been noted.

CONCLUSIONS

1. Roentgen therapy in moderately large dosage as the sole method of treatment for chronic secreting bronchiectasis is feasible and successful, resulting in great symptomatic improvement in a considerable proportion of cases.

2. The clinical improvement in chronic bronchiectasis treated with moderately high dosage of roentgen therapy may be so great in many cases as to approach a practically complete cessation of the symptoms of expectoration and cough.

3. Follow-up examination over a period of two years in those cases in which there has been improvement has shown no recurrence of symptoms with infections of the upper respiratory tract.

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LIPOMA OF THE TONGUE

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Lipoma of the tongue is very rare. Mazzini [1] states that only one case occurred among 259,366 patients seen in his hospital during thirty-one years. This patient was a woman, aged 56. There are forty-four authentic cases in the literature, to which the case reported here is to be added.

Fig. 1.—The normal tongue presenting at the angle of the mouth represents the midpoint in the anterior posterior measurement of its dorsum. This point is clearly seen as a notch on the right border of the extended tongue in figure 3.

ESSENTIAL DATA CONCERNING THIS LESION

Age of Appearance.—It is difficult to determine at what age the tumor first manifests itself. It grows so slowly and is so devoid of any indication of its presence until its size produces mechanical disturbance that it goes unnoticed for many months. Age of incidence is indicated in twenty-seven cases. Six of these were congenital, one was noted at 3 weeks and the others appeared much later in life. The frequency increases with age.

Sex.—This tumor, like others of the tongue with the exception of the vascular ones, shows a distinct preference for the male. In the thirty-six cases in which sex is noted, twenty-three relate to men and thirteen to women. The ratio is quite different in the mixed types (fibrolipoma). Of the six cases recorded, five occurred in women.

Origin.—Malon, Butlin and Guelliot believe that the tumor originates from small masses of fat in the genioglossus muscle and is slowly extruded as it gains in size. Bastianelli agrees with this opinion except in the cases of congenital tumors and those arising at the base. He believes that the latter originate in the abundant preepiglottic fat. Guelliot believes that trauma may determine the growth.

1. Mazzini, O. F., and Salvi, M.: Lipoma de la lingua, Rev. sud-am. de endocrinol. **16:** 500-504 (June 15) 1933.

Virchow and Colombo [2] believe that the tumor results from a metaplasia of the connective tissue which separates the muscle bundles following the deep vessels and nerves.

Pozzi distinguishes the origin of the submucous from the intermuscular types. The former originate immediately below the mucosa in the same manner that lipomas appear beneath the skin, the fat cells in the two locations being similar.

Geographic Location.—The tumor occurs most frequently on the edges of the tongue. It also occurs at the base and, rarely, on the tip. Of the forty cases in which the tumor is located, it occurred on the edges in twenty-two, on the base in eight, on the tip in five and on the "back" of the tongue in the remainder.

Histologic Location.—The tumor may be submucous, interstitial or intermuscular. The interstitial tumor is recorded in only three cases. It occurs in the submucosa most frequently.

included fat gives the mucosa a characteristic color variously described as "rose," "straw" or "yellowish gold." It is usually soft, giving a pseudofluctuation, or hard in proportion to the connective tissue element. The intermuscular tumor is fixed, in contrast to the mobile submucous lesion. It may or may not be pedunculated. It may become ulcerated.

Diagnosis.—The characteristics and history noted determine the diagnosis. Marked pseudofluctuation may require an aspirating needle for exclusion of the various cysts.

Treatment.—Complete removal is without danger and produces a definite cure.

REPORT OF CASE

Mrs. G. P., aged 45, examined Jan. 22, 1934, presented a mass the size of an orange on her tongue.

She stated that she had first noted a mass the size of a pea on the right tip of her tongue seventeen years previously. Nine years later the mass had reached such a size that she had to discard her dentures and take soft foods only. She was "treated by a quack cancer specialist without relief" two years later. During the past six years she had remained at home "expecting to die from her cancer."

Fig. 2.—Distortion of the lips and cheeks.

Fig. 3.—Appearance of tongue sixty days after removal of tumor.

Fig. 4.—Readjustment of lips and cheeks.

Character.—The tumor is benign. It varies from the size of a grain of rice to that recorded in this case. It is rarely multiple. It may be round, ovoid or lobulated. The ovoid tumor generally elongates parallel with the long axis of the tongue.

Adipose tissue predominates in most tumors. Intermuscular tumors are usually encapsulated. In some instances there is more connective tissue, characterizing the tumor as a fibrolipoma.

The rate of growth is very slow. One reporter records that a tumor grew from the size of a "grain of rice to the size of a grape in two years"; another that the growth reached the size of a walnut in three years; another that the growth extended from the cecal foramen to the lingual tip in fourteen and a half years, and so on. Our patient first noticed a small mass on the right tip of the tongue seventeen years prior to our examination.

The tumor is covered with smooth, thin, transparent mucosa which is usually devoid of papillae. The

The tumor was round, shiny, smooth, slightly translucent and moderately pseudofluctuant. It involved the tip and largely replaced the muscle of the right anterior half of the dorsum. The covering had the appearance of a modified squamous epithelium.

The circumvallate papillae and the upper third of the epiglottis were plainly visible as the result of the prolonged traction. The tumor could be pushed through a much enlarged mouth into greatly distended cheeks. Note the lower lip in figure 2.

The tumor was removed under local anesthesia January 30. A flap of the epithelial covering was raised from the anterior third of the tumor and the mass was resected. The left half of the tongue was employed to repair the loss on the right side with a moderate foreshortening which interferes with neither speech nor function. Figures 3 and 4 show the result sixty days later. Note the readjustment of the lips and cheeks.

The histologic report was "simple lipoma." The mass weighed 320 Gm. and measured 11 cm. by 9 cm. by 7 cm. This is the largest of these tumors reported in the literature.

Wealthy Street at Plymouth Road.

2. Colombo, Angelo: Lipoma della lingua, Tumori **18**: 233-261 (May-June) 1932.

ACUTE HEMATOGENOUS OSTEOMYELITIS IN CHILDREN

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MINNEAPOLIS

There is apparently considerable confusion and disagreement among physicians regarding the treatment of osteomyelitis. Most of the difference can be explained on the basis that there are many types and various stages and, therefore, more than one method of treatment. A discussion of treatment should specify the type of osteomyelitis and the stage of the disease. There would be a more general agreement if this principle were followed instead of considering the entire subject.

The distinct entity to be considered in this paper is the acute stage of hematogenous osteomyelitis in children. The methods of treatment of chronic hematogenous osteomyelitis are separate and distinct problems. Likewise, the treatment of osteomyelitis, which is secondary to and a complication of compound fractures, amputations, empyema, felons, abscessed teeth, metal bone plates and screws, is based on different surgical and anatomic principles.

Acute hematogenous osteomyelitis is a local manifestation of a blood stream infection which is usually transient. The skeletal infection is always secondary to a remote infection, the source of which is usually the integument or the mucous membranes of the upper respiratory regions. A bacteremia necessarily precedes the localization of infection in the osseous system. Cultures of blood and pus demonstrate that the most common infective agent is Staphylococcus aureus. Staphylococcus albus, Streptococcus pyogenes and pneumococcus organisms are also frequent causative agents.

The first skeletal manifestation of the disease is constantly localized in a single metaphysis of one of the long bones of the extremities (fig. 2) or in the juxta-epiphyseal region of other bones of the growing skeleton. The primary bone involvement is not in the medullary cavity or cortex of the main shaft of a growing bone. During the early acute stage of the disease the infection is limited to a single metaphysis. However, subsequent to direct or hematogenous spread of the infection and in the subacute and chronic phases of the disease the main shaft, the neighboring joint and the medullary cavity may be affected. If the infection is not in the main shaft and medullary cavity during the acute stage there is no reason for their surgical exposure. The surgical attack should be limited to the site of the infection or metaphysis.

Robertson [1] of Toronto recently stated that:

> The vital factors concerning the disease acute hematogenous osteomyelitis are not fully recognized by the medical profession. The disease has so long been regarded as actually what its name implies, that the diagnosis is not made in the early stages. If the disease were an infection of the medulla, as apart from the metaphysis, one would seek for signs of infection in the middle of the shaft. If these signs occur, they are extraordinarily rare. The early signs common to this disease are not to be found in the middle of the shaft. . . . The disease is so common, the symptoms so typical and the examination so definite, that one is surprised that the diagnosis is ever missed. I believe that if a case can be made for the seat of the infection being in the metaphysis, then the diagnosis will be very much simpler. The signs and symptoms all point to this.

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1. Robertson, D. E.: Acute Hematogenous Osteomyelitis, J. Bone & Joint Surg. 9:8-23 (Jan.) 1927.

ANATOMIC FEATURES

The clinical history and pathogenesis of the disease and the fundamental principles of treatment are to a large measure explained by our knowledge of certain anatomic features of the bone and joint system.

Because of a difference in anatomy and physiology, a long bone of the growing skeleton is divided into segments: the epiphyses, the metaphyses and the diaphysis (fig. 2). The name "metaphysis" was first used by Kocher to describe the broad cancellous end of the diaphysis which is adjacent to the epiphyseal disk. The metaphysis represents the bone most recently developed from the epiphyseal cartilage or disk and is therefore more vascular, more delicate, more susceptible and less immune than the older bone of the shaft, which is dense and compact. The marrow of the shaft, which occupies the medullary cavity, is "bountifully provided with cellular elements," while the marrow of the metaphysis, which fills the interstices between the trabeculae of the cancellous bone, presents a "paucity of phagocyte cells."

Fig. 1.—Subperiosteal hematoma involving the shaft of the femur of a child with infantile scurvy. The periosteum is firmly attached to the distal femoral epiphyseal disk and acts as a barrier against spread of a subperiosteal hematoma (or abscess) into the knee joint.

The researches of Hobo [2] and Robertson seem to prove that the medullary cavity is much richer in phagocytic elements than the metaphysis. Fraser [3] recently stated:

> I have a suspicion that in acute osteomyelitis the bone disturbance is but a local evidence of a general infection, and that the reason why the local infection is so constantly localized to the metaphysis is conceivably because we there encounter a concentration of reticulo-endothelial tissue, and that the local suppuration which results from the defensive activities of the area is in some measure protective against the general disturbance.

The cortex of the middle of the shaft is either more or slightly less than one-fourth inch (0.64 cm.) in thickness, while the cortex surrounding the metaphysis is much thinner, and near the epiphyseal disk it is paper thin (fig. 2). This is an important anatomic feature, since it explains the ease with which infection within the cancellous metaphysis may perforate into the subperiosteal space and why the rupture is usually juxta-epiphyseal, as emphasized by the late Dr. C. L. Starr.[4]

The nature of the blood vascular system of the metaphyses evidently plays an important rôle in the localization of infection in the cancellous juxta-epiphyseal region of growing bones. Lexer, Kuliga and Türk [5] in 1904 demonstrated the practically independent circulations of the epiphyses, the metaphyses and the

2. Hobo, Temo: Zur Pathogenese der akuten haematogenen Osteomyelitis, Acta scholae med. univ. imp. in Kioto 4:1 (March) 1921, bibliography.

3. Fraser, John: Acute Osteomyelitis, Brit. M. J. 2:539 (Sept. 22) 1934.

4. Starr, C. L.: Acute Hematogenous Osteomyelitis, Arch. Surg. 4:567 (May) 1922.

5. Lexer, Erich; Kuliga, P., and Türk, W.: Untersuchungen über Knochenarterien und ihre Bedeutung für einzelne pathologische Vorgänge am Knochensystem, Berlin, August Hirschwald, 1904.

cortex of the shaft. The metaphysis is richly supplied by the terminal branches of the nutrient artery. The vascularity of the juxta-epiphyseal region is abundant and consists of a bed of terminal capillary loops where the blood current is slowed and where infection is very likely to settle as a bacillary embolism. The nutrient artery also supplies the medullary cavity and endosteum and freely anastomoses with the periosteal vessels, through the haversian system, which are the main

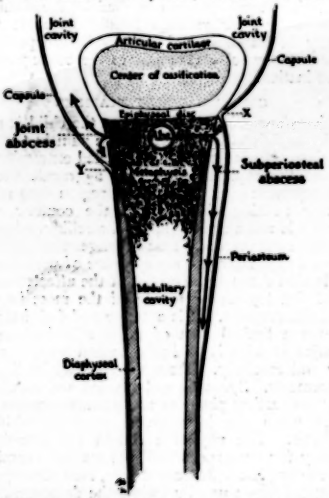

Fig. 2.—Diagram illustrating the usual course of spread of infection in acute hematogenous osteomyelitis. *X* represents the point of firm attachment of capsule and periosteum in the region of the epiphyseal disk when the metaphysis is extracapsular. *Y* is the fixation point of capsule and periosteum when the metaphysis is intracapsular.

sources of nutrition to the cortex of the entire shaft. Epiphyses receive their blood supply from articular and cortical arteries. The epiphyseal circulation is separated from the vascular system of the metaphysis by a practically avascular barrier, the epiphyseal disk. The extraordinarily rich capillary network of the metaphysis and juxta-epiphyseal region is gradually reduced with diminished physiologic activity of bone production of the epiphyseal disk. This explains why acute hematogenous osteomyelitis is essentially a disease of childhood and puberty.

The periosteum completely covers the shaft of a long developing bone and is firmly attached, except in a few instances, to the entire circumference of both proximal and distal epiphyseal disks. The ease with which the periosteum is stripped from the cortex of the shaft of a growing femur and the barrier that it provides against involvement of the knee joint because of its continuity with the distal femoral epiphyseal disk is demonstrated by the radiographic study of a subperiosteal hematoma resulting from infantile scurvy (fig. 1).

The problem of joint involvement secondary to acute hematogenous osteomyelitis depends largely on the anatomic relationship between the joint capsule, the periosteum, the metaphysis and the epiphyseal disk (fig. 3). Certain metaphyses are intracapsular (hip) while others are either entirely extracapsular (ankle) or intracapsular and extracapsular (shoulder). When a metaphysis is intracapsular the periosteum no longer protects the joint from involvement, since the greater portion of the periosteum is attached to and blends with the capsule instead of with the epiphyseal disk. Perforation of the intracapsular metaphyseal cortex and its thin periosteal covering permits the infection to invade the joint cavity directly. The metaphysis of the proximal end of the femur is completely intracapsular. This anatomic feature explains why infection of the hip joint is the rule in acute hematogenous osteomyelitis of the proximal end of the femur. Perforation of the distal tibial metaphyseal cortex does not invade the ankle joint directly, since this metaphysis is entirely extracapsular. Clinical experience teaches one that infection of the knee joint is an infrequent complication of acute hematogenous osteomyelitis of either the distal end of the femur or the proximal end of the tibia. Most rigid knees that one does observe are more often the result of extra-articular adhesions and contractures than intra-articular infection.

Surgeons must have a thorough knowledge of the anatomic relationship between metaphysis, epiphyseal disk, periosteum and joint capsule in the many regions of the skeleton, since surgical drainage of acute hematogenous osteomyelitis without joint infection should always be made through an extracapsular dissection. The order of frequency of involvement of the metaphyses and juxta-epiphyseal cancellous bone of the growing skeleton is as follows: proximal end of tibia, distal end of femur, distal end of tibia and fibula, proximal end of femur, ilium, proximal end of humerus, distal end of radius, and distal end of humerus. No bone, however, is exempt.

CLINICAL PATHOLOGIC FEATURES

The earliest clinical phase of acute hematogenous osteomyelitis is in fact an acute hematogenous metaphysitis, when diagnosis is rarely made and surgical treatment more rarely performed. The incidence of chronic osteomyelitis will be lessened when physicians attack the primary bone infection within the metaphysis before it perforates the metaphyseal cortex and involves, either by direct or by hematogenous spread, the cortex and medullary cavity of the shaft of the affected bone,

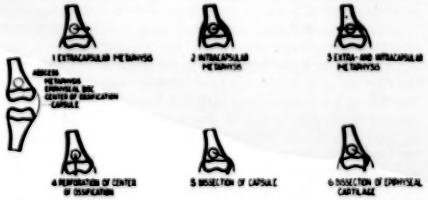

Fig. 3.—Drawings which illustrate the importance of the anatomic relationship of metaphysis, epiphyseal disk and joint capsule in determining joint involvement in acute hematogenous osteomyelitis.

neighboring joint and other regions of the skeletal apparatus. The infection remains localized in the metaphysis or juxta-epiphyseal region for a period of hours or several days, depending on the virulence of the invading organism and the local and general resistance of the patient. It is during this very brief period when the infection is confined to the interior of the metaphysis that diagnosis is essential and metaphyseal drainage imperative if one is to avoid a surgical catastrophe or chronic osteomyelitis with recurrent disability

throughout the life of the patient. The main issue in the treatment of the earliest phase of acute osteomyelitis should not be a consideration of the comparative values of the Carrel-Dakin, Orr,[6] Baer and other technics but rather of the necessity of adequate drainage of the affected metaphysis during the first twenty-four, thirty-six or forty-eight hours of the disease before the infection perforates the cortex or wall of the metaphysis near the epiphyseal disk, where it is paper thin, and before it spreads beneath the periosteum. The older textbooks taught that the usual course of spread of the infection was directly from the cancellous end of the bone or metaphysis into the medullary cavity. This may occur, but the common course of spread of the infection, as first emphasized by Starr, is by perforation through the extremely thin cortical wall of the metaphysis adjacent to the epiphyseal disk. The infection then spreads beneath the periosteum along the shaft of the bone, which it invades through the haversian system. When there is evidence of a subperiosteal abscess the disease has passed beyond the phase that I refer to as acute hematogenous metaphysitis.

The term acute hematogenous metaphysitis should be added to the terminology of the study of osteomyelitis because it defines that phase of acute hematogenous osteomyelitis when surgical treatment may cure the disease without necrosis and sequestration of bone. The term will help to focus the attention of physicians on the metaphyses of the growing skeleton when considering cases presenting acute infection. It may also stimulate a more general interest in the anatomy, physiology and clinical significance of the metaphyses.

Acute hematogenous osteomyelitis or metaphysitis is preeminently a disease of childhood and puberty when the metaphyses are extremely vascular. The late adolescent skeleton is infrequently affected by the disease and the adult skeleton rarely because the vascularity of the metaphyses is diminished subsequent to the period of greatest physiologic activity of the epiphyseal cartilages or disks. Acute osteomyelitis in infancy, as recently reported by Green,[7] "differs in so many respects from osteomyelitis in older children that a separate consideration of the disease in children under 2 years of age is desirable."

The disease is definitely more common in boys than in girls, and this is because boys are more subject to trauma, exposure and infection of the skin and upper respiratory regions.

Only a single metaphysis is affected at the onset of the disease, but after the first twenty-four to thirty-six hours it is common to see another bone lesion occurring. Infrequently the primary bone infection may localize in a center of ossification of one of the epiphyses. If the invading organism is very virulent and the general and local resistance of the patient extremely low, the infection may be overwhelming from the onset. Several bones may be involved simultaneously, and an early death occurs in most cases owing to a general septicemia with localization of the infection in vital parts.

An analogy between acute appendicitis and acute metaphysitis is a sound one, since the tragic complications of each disease are the result of perforation. Today it is general knowledge among the public that the proper treatment of acute appendicitis is appendectomy during the early phase of the disease before rupture of the appendix. The medical profession should continue its efforts to inform the public regarding the tremendous importance of early diagnosis and treatment of acute hematogenous metaphysitis before perforation of the cortex of the affected metaphysis. A subperiosteal abscess may be compared with peritonitis, since both are pathologic processes secondary to perforation. Many patients do not seek the advice of a physician until several days after the onset of symptoms, which may have been masked by the administration of drugs. Physicians should be alert to the necessity of diagnosis and surgery before perforation of the metaphyseal cortex and to the consequences of procrastination.

6. Orr, H. W.: Osteomyelitis and Compound Fractures and Other Infected Wounds, St. Louis, C. V. Mosby Company, 1929.
7. Green, W. T.: Osteomyelitis in Infants, J. A. M. A. **105**: (Dec. 7) 1935. Green, W. T., and Shannon, J. G.: Osteomyelitis of Infants: Disease Different from Osteomyelitis of Older Children, Arch. Surg. **32**: 462 (March) 1936.

CLINICAL MANIFESTATIONS

During the earliest clinical phase the child is acutely ill and complains of constant severe pain in the region of a joint. Movements of the affected extremity, pressure and the application of heat aggravate the pain. The integument over the involved region does not present any striking changes and the contour of the extremity is not altered. Marked swelling, edema and redness are not present. These changes may appear one or several days later and are evidence of perforation of the infection through the cortex of the affected metaphysis. Point tenderness is one of the most important clinical observations. It is extreme and definitely localized over a limited area of the involved metaphysis. The adjacent joint is clinically normal when examined gently and carefully, although there may be limitation of movements. Synovitis and effusion are not observed during the earliest phase of acute hematogenous osteomyelitis when the infection is confined within the metaphysis. The physician should not examine the extremity for tenderness until the manual examination has been completed. Increased pain, lack of cooperation and muscle spasm usually follow the demonstration of tenderness. The chief complaint is incessant pain in the neighborhood of a joint and the chief sign is severe, unchangeable tenderness, which is localized over the affected metaphysis.

The patient presents signs of intense toxemia. The temperature is elevated to 102-104 F. and the pulse rate is rapid, from 120 to 130 per minute. Blood examination reveals a high polymorphonuclear leukocytosis, usually up to 25,000 or 30,000. Blood cultures should be done as a routine and the urine should be examined for Hedri's sign or the presence of lipuria.

A careful investigation of the history of the patient frequently reveals that trauma may have played an important rôle in the localization of the infection. The type of injury is generally a metaphyseal strain.

Radiographic studies of the involved bone and neighboring joint are negative for any evidence of infection during the phase of acute hematogenous osteomyelitis. Acute osteomyelitis does not cause enough cortical change to be recognized by the x-rays until the tenth to the twelfth day.

PATHOGENESIS

The pathologic changes within the metaphysis are identical with those in soft tissues which are combating a pyogenic infection. The clinical manifestations, however, are different, since the infection is confined within a bony structure which does not yield to pressure resulting from the combat between the infection and the defensive mechanisms until the "bone furuncle" perforates the metaphyseal cortex and spreads beneath the overlying periosteum. The abscess usually makes its

exit from the metaphysis near the epiphyseal disk where the cortex is paper thin. This teaching is extremely important in view of the fact that older textbooks state that the infection usually spreads directly into the medullary cavity of the main shaft. The infection may spread either directly or by way of the blood stream into the haversian canals and medullary cavity or it may pass directly through the epiphysis into the neighboring joint. Spread of the infection to the joint may also result from dissection of the capsule or articular cartilage (fig. 3). If the abscess perforates the metaphyseal cortex into the subperiosteal space, further spread of infection is largely determined by the relationship of the metaphysis to the attachment of joint capsule and periosteum (fig. 2). Most metaphyses are extracapsular and therefore the spread of infection is subperiosteal along the diaphysis or shaft. The periosteum may be stripped from epiphyseal disk to epiphyseal disk, so that the entire shaft may be infected by way of numerous periosteal vessels through the haversian system. Multiple small areas of bone necrosis may develop and this accounts for the "spotty" appearance of radiographic studies of chronic osteomyelitis. The proximal femoral metaphysis is of special interest, since it is completely intracapsular. Perforation of its cortex, as previously explained, invariably involves the hip joint.

The abscess may dissect the periosteum varying distances along the shaft and rupture through the periosteum into intermuscular planes and subcutaneous tissue and finally point beneath the integument. The subcutaneous abscess may be over the middle of the shaft of the bone, but the source of the abscess is the affected metaphysis.

TREATMENT

The treatment of acute hematogenous osteomyelitis includes a conservative surgical program following the principles laid down by Starr. Adequate attention to the general state and dehydration of the patient are also primary considerations. Children with acute hematogenous osteomyelitis should be divided into two groups. The division depends on whether or not the abscess has perforated the cortex of the infected metaphysis. In the first group the infection is confined within the metaphysis and the infection has not penetrated its thin wall or cortex. Therefore a subperiosteal abscess will not be encountered at the time of surgical exposure of the metaphysis. This phase is present during the first twenty-four, thirty-six or forty-eight hours of the clinical manifestations of the disease. It is this phase which I have described as acute hematogenous metaphysitis when diagnosis is rarely made and surgical drainage more rarely provided. The infection has not yet spread beyond the metaphysis, and adequate surgical treatment may prevent extensive involvement of the main shaft with necrosis and sequestration of bone. It is during this phase that the physician has an opportunity to influence appreciably the prognosis as to both mortality and morbidity.

Through a small incision the surgeon exposes the affected metaphysis and not the main shaft. The incision should be made directly over that portion of the metaphysis which was extremely tender. The cortex of the metaphysis is exposed subperiosteally. The periosteum should not be elevated except in the region of the metaphysis which is to be decompressed. Several drill holes are then made directly into the cancellous bone of the metaphysis, or a window about a half-inch by 1 inch is removed from the metaphyseal cortex in the juxta-epiphyseal region. The cancellous bone of the metaphysis should not be curetted. If pus is encountered, a specimen should be sent to the laboratory for bacterial cultures. If pus is not found, a culture should be taken of a small portion of the cancellous bone. The wound is lightly packed with petrolatum gauze according to the Orr method and then covered with sterile dressings and sheet wadding. A plaster-of-paris cast is properly applied for the dual purpose of physiologic rest and the prevention of deformity of the affected extremity.

As the metaphyseal abscess develops it will drain through the surgical openings or window into the overlying dressings instead of taking a subperiosteal course with spread of the infection to the main shaft and medullary cavity.

One should not anticipate a dramatic ending of the clinical signs and symptoms of the acute infection following operation. The bone involvement is only a localized manifestation of a general blood stream infection. The clinical course will usually continue as a severe general infection until the defensive mechanisms of the body begin to gain control. Continuation of the signs of a general infection postoperatively should not be interpreted as spread of the skeletal infection if the original surgical drainage was properly performed. However, the extremity should be vigilantly observed for swelling, reddness, edema, pain and tenderness, which are clinical manifestations of spread of infection. During this critical period the patient needs rest and fluids in order to combat the problem of dehydration. Other bone lesions may develop subsequent to the primary one. They cause less acute reactions; however, they should be dealt with in the same manner as the original bone focus.

Although the clinical course of the acute infection is not appreciably shortened by this program of therapy, there is no doubt that the skeletal involvement and morbidity are greatly reduced.

In the second stage of the acute phase of hematogenous osteomyelitis the infection has perforated the cortex of the metaphysis and spread subperiosteally along the shaft of the affected bone or directly within the neighboring joint. There is a definite change in the clinical manifestations after the metaphyseal abscess perforates the juxta-epiphyseal cortex. Pain and tenderness are no longer localized to the region of the primary bone focus in the metaphysis but extend over a greater area corresponding to the spread of infection. Swelling, redness and edema are now present. The contour of the extremity is no longer normal as it was before perforation. It is during this critical period that the disease is generally recognized and treated. The treatment is not only delayed but often is too radical. It is in this group of patients that dehydration is pronounced. The local bone and joint infection should not be considered the major issue until measures have been instituted to improve the general resistance of the patient and to restore body fluids. Generous quantities of physiologic solution of sodium chloride, 5 per cent dextrose, multiple blood transfusions and immune serum may be indicated.

A subcutaneous or subperiosteal abscess is present. The abscess may extend the entire length of the diaphysis. The bone is stripped of its periosteum and may appear "dead" although radiographic studies of the entire bone are negative for any evidence of infection.

It is certain that the abscess should be completely incised and drained. It is also just as certain that the

shaft and medullary cavity should not be attacked with chisel and mallet. Too frequently a radical saucerization or gutter operation is performed on the main shaft of the bone. The marrow of the medullary cavity is exposed and it may even be described as "pus." Starr was the first physician to teach the fact that the medullary cavity is not infected as a rule during this phase of the disease.

The primary bone abscess is in the metaphysis, which is the source of the subcutaneous or subperiosteal abscess. Therefore, chisel and mallet or drill may be used to enlarge the opening in the cortex of the metaphysis through which the infection had perforated and spread beneath the periosteum. Infrequently the medullary cavity may be filled with pus. Therefore a relatively large drill hole, about three-eighths inch in diameter, should be made through the cortex into the medullary cavity a short distance on the diaphyseal side of the infected metaphysis. If pus escapes, several similar drill holes should be made along the infected diaphysis for adequate drainage of the medullary cavity. Pus will be found infrequently in the medullary cavity; however, I believe that in the presence of stripping of the periosetum a drill hole should be made directly into the medullary cavity as a routine. It can do no harm and gives important information.

The wound is lightly packed (Orr method) with petrolatum gauze and covered with sterile dressings and sheet wadding. A plaster-of-paris cast is applied for the dual purpose of physiologic rest and prevention of deformity. Again, as already stated, the physician should anticipate continuation of signs and symptoms of a general blood stream infection. The persistence of clinical signs of severe infection should not tempt the surgeon to perform unsound and radical gutter operations on the shaft and medullary cavity. If the primary bone lesion involves the proximal femoral metaphysis or femoral neck region, in this stage of the disease the hip joint is invariably infected. Surgical drainage of both metaphysis and joint is indicated.

Involvement of the distal metaphysis of the fibula at this stage with stripping of the periosteum from the shaft by a subperiosteal abscess also presents a variation from the usual treatment. Diaphysectomy is definitely indicated, since the fibula is a non-weight bearing bone and function of the extremity is compatible with loss of substance from the fibular shaft. The diaphysis should be removed as far as the periosteum is stripped by pus. Great care must be exercised during the dissection in order that the common peroneal nerve is not injured. Diaphysectomy is indicated in this stage of the disease in any long bone that can be sacrificed without loss of function to the part.

In all cases the wound should fill in with granulation tissue from the bottom and the walls should not be permitted to come in contact. To accomplish this and to control odor the petrolatum dressings should be changed about every ten or more days.

Many patients will gradually pass into the chronic stage of the disease. Spread of infection, vascular damage, necrosis of bone, sequestrum formation and deformity will determine the subsequent surgical program.

CONCLUSIONS

1. The first skeletal manifestation of acute hematogenous osteomyelitis is localized within a single metaphysis.

2. The primary bone involvement is not in the cortex of the main shaft and medullary cavity.

3. Acute hematogenous metaphysitis is a distinct clinical entity. It represents the earliest clinical phase of acute hematogenous osteomyelitis when the infection is confined within the interior of the affected metaphysis. It is during this period that proper surgical treatment may prevent extensive osseous and joint involvement, necrosis and sequestration of bone.

4. Radical gutter operations on the cortex of the main shaft and medullary cavity during the acute stage of the disease are surgically and anatomically unsound.

5. Dehydration should be prevented and controlled if present.

6. The surgical treatment includes conservative but adequate metaphyseal drainage. The surgical principles are based on the fundamental clinical and pathologic investigations of the late Dr. C. L. Starr.

7. The pathogenesis of the disease is determined by anatomic features of the bone and joint system.

8. The moment the infection perforates the cortex of the metaphysis and spreads beneath the periosteum, the prognosis as to morbidity is critically altered.

9. Acute hematogenous osteomyelitis is divided into two stages. The first stage is before and the second stage is subsequent to perforation of the thin cortical wall of the affected metaphysis. The clinical and pathologic changes, treatment and prognosis of the two stages are distinctly different.

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THE CENTRAL ACTION OF BETA-AMINOPROPYLBENZENE (BENZEDRINE)

CLINICAL OBSERVATIONS

M. H. NATHANSON, M.D.
LOS ANGELES

Beta-aminopropylbenzene (benzedrine) is a compound of the epinephrine series resembling ephedrine in chemical constitution, as shown in the structural formula. In 1910 Barger and Dale [1] made an exhaustive study of a large group of epinephrine-like substances, with the conclusion that an action simulating that of true sympathetic nervous stimulation is not peculiar to epinephrine but is possessed by a large number of amines (substituted ammonias). These substances were termed sympathomimetic amines by Barger and Dale, since they mimic the effects of sympathetic stimulation. The response of the blood pressure in experimental animals has been used largely to study the comparative activities of these compounds. More recently I have studied the comparative actions of these substances on the cardiac standstill which may be induced in many individuals by pressure over the carotid artery in the neck.[2]

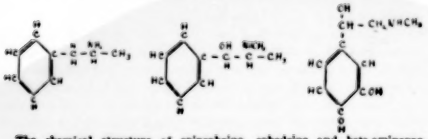
Interest in these compounds has centered almost entirely on the sympathomimetic action, an effect on the peripheral nervous system. This action is responsible for the dilatation of the pupils and bronchi, for vasoconstriction and the pressor effect, and for the cardiac stimulation. With the rediscovery of ephedrine in 1923 it was found that, in addition to the peripheral action, certain of these compounds have a stimulating effect on

From the Department of Medicine, University of Minnesota, Medical Service, General Hospital.

1. Barger, G., and Dale, H. H.: Chemical Structure and Sympathomimetic Action of Amines, J. Physiol. 41:19, 1910.

2. Nathanson, M. H.: Further Observations on the Effect of Drugs on Induced Cardiac Standstill, Arch. Int. Med. 54:111 (July) 1934.

the central nervous system. This has been termed the central effect in distinction to the peripheral sympathomimetic action. The exact site of this action is not at present clearly understood. Ephedrine shows this effect in that moderate doses may be followed by nervousness, tremor, nausea, sweating and insomnia. Experimentally it was shown as early as 1913 [3] that narcotized animals may be awakened by ephedrine, and this drug has been



The chemical structure of epinephrine, ephedrine and beta-aminopropylbenzene (benzedrine).

used in patients as an antidote for narcotic drugs.[4] Schmidt [5] has demonstrated a stimulation of the respiratory center. The central action of ephedrine results in unpleasant side effects when the peripheral response is desirable. The central stimulating action has been utilized therapeutically in the treatment of narcolepsy and good results have been reported.[6]

Alles [7] noted that beta-aminopropylbenzene possessed a powerful central action with a comparatively weak peripheral effect. Prinzmetal and Bloomberg [8] found that beta-aminopropylbenzene was approximately three times as effective in narcolepsy as ephedrine. Their observations have been confirmed more recently.[9] In two patients suffering from typical narcolepsy, treated over a period of four months, I have observed similar remarkable therapeutic results. Typical narcolepsy is encountered infrequently, but symptoms of a milder degree simulating those of narcolepsy are commonly observed. The two chief features of narcolepsy are (1) attacks of somnolence and (2) paroxysms of extreme weakness and helplessness (cataplexy). The true nature of a narcolepsy is uncertain, but it has been suggested that this condition merely represents an exaggerated state of drowsiness and exhaustion, complaints that are encountered daily by the physician. Daniels [10] in his discussion of the nature of narcolepsy suggests that "the symptoms of narcolepsy represent little more than gross exaggerations of normal weaknesses of the flesh. Diurnal drowsiness is obviously a common failing and many of us are aware of relaxation of certain parts or experience difficulty in bringing certain muscles into play under conditions of emotional stress."

The effectiveness of beta-aminopropylbenzene in narcolepsy suggested a trial of the drug in patients who complained of exhaustion and who tired easily. Beta-aminopropylbenzene sulfate was administered to forty such patients. Most of these patients did not suffer from organic disease and could be included under the diagnosis of nervous exhaustion. Focal infection was present in some instances and in other cases the exhaustion followed an infection. The drug was administered in tablets containing 10 mg. Most of the patients received a daily dose of 20 mg., one tablet before breakfast and another before the noon meal. In patients in whom fatigue was most evident late in the day, a single dose of 10 or 20 mg. was given about 11 o'clock in the morning. The drug was used for periods varying from a week to three months. With but few exceptions, a rather striking physical and mental reaction was noted.

EFFECT ON FATIGUE

In approximately 80 per cent of the patients there was a marked amelioration of this symptom. Many of the patients had complained of fatigue for long periods and had tried various types of treatment without benefit. In four instances the state of exhaustion was associated with a low metabolic rate. Although thyroid extract had been used with little effect, each of these patients stated that the sense of general fatigue and sluggishness was almost completely eliminated by the beta-aminopropylbenzene sulfate.

Four patients complained of migraine attacks when they became especially tired. Amelioration of the fatigue by beta-aminopropylbenzene sulfate appeared definitely to lessen the frequency of the migraine attacks. In one patient, an interval of dizziness constantly preceded the onset of the migraine. She has been able to prevent the headaches repeatedly by taking one tablet of beta-aminopropylbenzene sulfate in the prodromal stage.

MENTAL EFFECTS

A sense of increased energy and capacity for work was noted in more than half of the cases. In addition, a feeling of exhilaration and sense of well being was a consistent effect. This followed repeatedly after the ingestion of the drug. In a few patients there was a secondary depression following the initial stimulation. Many patients volunteered that there had been a definite increase in mental activity and efficiency. Another striking reaction was a tendency to loquaciousness. This was very marked in many instances and was noted both by the patients and by those about them.

EFFECT ON WEIGHT

Ten patients noticed a marked loss of appetite and with this a definite reduction in weight. Two patients stated that they had lost their craving for sweets. The loss of weight varied from 7 to 20 pounds (3.2 to 9 Kg.). The most marked loss in weight occurred in a patient with narcolepsy who lost 20 pounds in a period of two months. After the initial loss, in each instance the weight remained stationary with the continued use of the drug. A study of the basal metabolism in two patients who had lost weight indicated that the loss of weight was not due to an increase in the basal metabolic rate. The loss of weight can probably be explained by the lessened appetite and increased physical activity.

UNPLEASANT REACTIONS

Unpleasant effects were observed by a relatively small number of patients. Dryness of the mouth, disturbed sleep, transitory tremor of the hands, sweating and palpitation were noted. The unfavorable reactions were

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usually mild and of short duration. It was necessary to discontinue the drug in but three patients: in two, owing to disturbed sleep and in one instance because of severe palpitation.

SUBJECTIVE EFFECTS IN NORMAL INDIVIDUALS

The patients uniformly noticed that the various effects appeared in their maximum intensity soon after the initial dose of the beta-aminopropylbenzene sulfate. It therefore seemed interesting to study the subjective reactions of a large group of normal subjects following a single administration of the drug. For this purpose a group of young individuals, consisting of the resident hospital staff, technicians and student technicians, was used. The drug was administered in two ways: (1) in divided doses, 1 tablet (10 mg.) before breakfast, and a second tablet before the noon meal, and (2) a single dose of 20 mg. before the noon meal. The study was made on eighty individuals, of whom fifty-five received the drug and twenty-five were given tablets of the same appearance containing lactose. Each subject received a questionnaire in a sealed envelop with instructions to open the envelop and answer the questions as carefully as possible in the evening.

Questionnaire Used in the Study of the Action of Beta-Aminopropylbenzene Sulfate in Eighty of the Resident Hospital Staff and Laboratory Technicians

The purpose of this experiment is to determine the type and degree of reaction following the administration of the tablets. It is hoped that you will make a careful analysis of the physical and mental reactions which may have occurred during the day of the experiment. If any reaction is observed it is desirable that an approximate estimate of the intensity of effect be noted and expressed as follows: 1 plus indicates a mild reaction; 4 plus an intense effect and intermediate degrees expressed as 2 plus or 3 plus. It is best to compare your physical and mental state on the day of this experiment with that of the usual day.

1. Any evidence of increased energy, increased desire or capacity for work?
2. Reaction to day's work as regards fatigue?
   a. Less fatigue
   b. Increased fatigue
   c. No effect.
3. Many normal individuals feel tired at certain times of the day. If this is a frequent reaction in you, has it in any way been modified today?
4. Have you been more talkative?
5. Dryness of mouth?
6. Sweating?
7. Appetite: Less? More?
8. Effect on sleep (this should be answered on the following morning).
9. Any evidence of the following:
   a. Euphoria (sense of well being)
   b. Feeling of exhilaration
   c. Depression
10. Mental activity: as you look back over the period following the tablets, have you observed any effect on mental processes? Has there been any indication of increased mental efficiency or any evidence of clouding of mentality?
11. Any other reaction should be noted such as headache, nausea, tremor, palpitation or any effect not mentioned.
12. If any reaction occurs, note if possible the approximate time of onset and duration

Name.....

It is important that the name be signed, as the type of tablet administered will otherwise not be known and the record would be worthless.

The accompanying tabulation shows the contents of the questionnaire and the reactions are summarized in the table. There was a great variation in the intensity of the reaction but in only eight instances was the response so minimal as to be considered questionable. The most frequent effect was a sense of well being and a feeling of exhilaration, and this occurred in more than two thirds of the subjects. Next in order of frequency was a lessened fatigue in 62 per cent, talkativeness in 56 per cent, and increased energy and capacity for work in 54.5 per cent.

Some of the expressions that were used were the following: "increased energy, felt as if I could not get places fast enough"; "had no feeling of usual fatigue"; "usually tired at dinner time, resumed work after dinner and continued until 10 p. m. and no fatigue"; "I have done things today I usually dislike but which I rather enjoyed doing today"; "the last hour and a half of work is usually an effort, today I felt fine"; "my usual after lunch slump was appreciably reduced"; "did not have my usual lethargic period after lunch"; "sense of well being, nothing seemed impossible of accomplishment"; "I wanted to stop and talk to everybody I met"; "I found myself entering into conversation with donors who came to the laboratory for tests"; "I felt unusually friendly toward other people"; "my spirits have been high all day, felt bubbling inside"; "this is a few days before the menstrual period and in the last two days I had my usual premenstrual depression; today this was all gone"; "had feeling of being very efficient"; "I was able to organize my work quickly and efficiently"; "my mind felt clear all day."

Most of the subjects who experienced these favorable reactions also noted some effects which were mildly unpleasant. There was no relationship between the favorable and the unpleasant effects. In some instances an unusually favorable response was associated with minimal unpleasant effects and in an occasional subject the undesirable effects predominated. The unpleasant reactions were usually of a mild degree and rather transient. The most frequent were dryness of the mouth, sweating, lessened appetite, and a disturbance in sleep. In a smaller number tremor of the hands was noted in sixteen instances, palpitation in eleven, slight headache in eleven, nausea in five, and dysuria in four. The incidence of unpleasant reactions seemed higher in this group than in the series of patients discussed in the earlier portion of this report. This may be explained by the more advanced age of the latter group, since it was observed in several instances that older persons seemed to tolerate more and require more of the drug for a therapeutic effect.

Summary of the Reactions of Fifty-Five Members of the Resident Staff and Laboratory Technicians After the Administration of Twenty Milligrams of Beta-Aminopropylbenzene Sulfate

	Number	Per Cent
Increased energy, desire and capacity for work	30	54.5
Reaction to work as regards fatigue		
(a) Less fatigue	34	62.0
(b) Increased fatigue	10	18.0
(c) No effect	11	20.0
Usual period of exhaustion abolished	21	38.0
More talkative	31	56.0
Euphoria and feeling of exhilaration	37	67.0
Depression	4	7.0
Mental activity and efficiency		
(a) Increased	23	42.0
(b) Diminished	2	3.6
Dryness of mouth	34	62.0
Sweating	27	50.0
Appetite		
Less	27	50.0
Better	5	9.0
Insomnia (usually mild to moderate)	17	30.0

In twenty-four of the questionnaires, statements were made relative to the time of onset of the effects and the duration. There was more certainty and consistency as to time of onset. Most of the effects were noted from thirty minutes to one hour after the ingestion of the drug. There was less certainty as to duration of

the action, but the usual report was that the reaction lasted until the early or latter part of the evening, a period varying from seven to twelve hours.

REACTIONS OF CONTROL GROUP

The reactions of the twenty-five subjects who received the lactose tablets were remarkably consistent. Twenty-one, or 84 per cent, reported no reaction of any type. Two subjects stated that they were aware of slightly increased fatigue and one described a fluttery feeling, transient and mild, shortly after the ingestion of the tablets. In one questionnaire, increased energy, lessened fatigue, increased talkativeness and euphoria were indicated as being present in a mild degree, designated as one plus. When the responses of the two groups were compared, it was evident that the questionnaire method was highly reliable for the study of the subjective effects of the drug.

COMMENT

The results of this study indicate that beta-aminopropylbenzene (benzedrine) exerts a definite stimulating effect on the higher centers of the central nervous system in most individuals. There is a great variation in the intensity of the response, but in most instances the administration of the drug is followed by a marked lessening of fatigue, an increase in mental and physical activity, and a distinct feeling of exhilaration.

The reactions observed indicate that the drug may have a rather wide therapeutic application but a more prolonged experience is required to determine the exact indications. In patients who become easily fatigued or who are in a chronic state of exhaustion, the drug seems to exert its most favorable effect. This treatment is, of course, symptomatic and should be used only when all physical causes of fatigue have been considered and eliminated. The drug would seem to have its greatest value in the most frequent type of fatigue, that of nervous exhaustion. The symptomatic relief in patients of this type appears to have a decidedly beneficial effect. A limited experience in four patients suffering from mental depression indicates that this condition may also be favorably influenced. From observations in a group of normal individuals, it would appear that a very important purpose which may be served by the drug is the preparation of an individual for situations that require the expenditure of unusual amounts of physical or mental energy.

It is obviously of importance to consider the question of possible harmful effects, including the possibility of habituation and development of a tolerance. A wider and longer experience with the drug is necessary before this question can be definitely settled. The indications from several sources, however, are that the substance is without harm even on prolonged use. This evidence is derived from (1) pharmacologic studies on beta-aminopropylbenzene, (2) clinical observations on the closely related compound ephedrine, and (3) clinical studies with beta-aminopropylbenzene, although the observations have as yet been comparatively limited.

Pharmacologic studies indicate that beta-aminopropylbenzene is of remarkably low toxicity. The minimum lethal dose for the rat is 25 mg. per kilogram of weight, and for the guinea-pig 34 mg. per kilogram of weight.[11] The low toxicity is apparent when one considers that a dose of from 10 to 20 mg. has a definite effect in most individuals. Investigators agree that the prolonged use of ephedrine, a compound closely related to beta-aminopropylbenzene, does not have any cumulative harmful effects and does not result in habit formation.[4] It will require further investigation to determine whether this applies fully to beta-aminopropylbenzene. Although experience with prolonged use of this substance has been limited, the results up to the present indicate that there are few, if any, harmful effects. One patient, reported by Prinzmetal and Bloomberg, received the drug for fourteen months; no harmful effects are mentioned and the original daily dose of 20 mg. continued to be fully effective. I have observed four patients who have received daily doses of from 20 to 40 mg. for a period of four months. The initial dosage was still effective and, except for a moderate loss of weight, there were no effects that might be considered harmful.

It is well known that drugs of the epinephrine series raise arterial pressure in certain dosage. No such effect was noted in the present studies with beta-aminopropylbenzene. It is apparent that the peripheral effect requires a definitely larger dose than that which produces a central action. This is very desirable, since a sympathomimetic effect over a long period might be distinctly harmful. Epinephrine and ephedrine will induce cardiac irregularities in many individuals, and this increased cardiac excitability is especially dangerous in patients suffering from coronary disease. The development of extrasystoles apparently due to the beta-aminopropylbenzene was observed in only one instance. In four patients who showed ventricular extrasystoles, this drug did not seem to increase the frequency of the ectopic beats.

A definite possibility of a harmful effect exists in that prolonged administration may result in an increased activity and energy expenditure beyond the capacity of some individuals. This is particularly likely since the protective and retarding influence of fatigue is lost.

The judicious administration of the drug should effectively prevent such a harmful action, but it is conceivable that this may occur in patients who are taking the drug without the guidance of a physician.

CONCLUSIONS

1. Beta-aminopropylbenzene (benzedrine) produces in most individuals a definite stimulation of the central nervous system in doses which do not result in a peripheral sympathomimetic action.

2. Euphoria, a feeling of exhilaration, lessening of fatigue, an increased energy and capacity for work and talkativeness follow quite regularly the administration of from 10 to 20 mg. of beta-aminopropylbenzene sulfate.

3. Although the drug has its most striking effect in narcolepsy, it acts favorably in states of persistent exhaustion and in individuals who become easily fatigued. The reactions observed indicate that patients who are in a depressed state may be benefited.

4. Studies in normal individuals indicate that benzedrine increases energy and efficiency to a degree that the drug should be of value in the preparation of individuals for activities that require an unusual expenditure of physical and mental energy.

5. The complete indications and contraindications in the use of the drug must await the results of further experience.

2007 Wilshire Boulevard.

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CONSTRICTION RING DYSTOCIA

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CHICAGO

The clinical importance of intra-uterine rings complicating labor is not sufficiently appreciated. This condition, which causes dystocia, is chiefly functional and has been designated by at least twenty different terms. The assumption that intra-uterine rings are due solely to the contraction ring of Bandl, the contraction ring of Schroeder or the retraction ring of Barbour and Lusk is not tenable, in view of the different uterine levels at which they are found. The designation of this dystocia as a constriction ring dystocia is based on biologic grounds. A review of 350 cases collected from the literature and twenty-one cases in my experience demonstrates that a conservative management with delivery by vagina is the safest for the mother and child.

THE FORMATION OF INTRA-UTERINE RINGS

The physiologic division of the uterus into an upper and a lower uterine segment was definitely established by the second stage frozen section of Braune [1] in 1872. Bandl [2] emphasized and popularized the occurrence of this ring in labor, with the result that the designation ring of Bandl is used for normal and abnormal labors. Schroeder [3] pointed out the zone of demarcation between the two segments occurring in normal labor and called this zone the "contraction ring." Barbour [4] and Lusk [5] designated the zone of demarcation between the two segments occurring in normal labor the "retraction ring." The criteria of these observers were based on longitudinal changes but no evidence was presented of the property of transverse contraction at any level.

Comparative anatomy and physiology of the lower animals studied by Ivy, Hartman and Koff [6] and Rudolph and Ivy [7] demonstrate the physiologic property of constriction rings or zones having the property of transverse contraction. Bumm [8] has presented a specimen of a postpartum human uterus which shows intra-uterine transverse rings or zones in the upper and lower uterine segment, which resembles the postpartum uterus of the dog.

A ring is not demonstrated by external inspection in cesarean sections but is found only after the hysterotomy when difficulty is encountered in attempting to extract the fetus from the uterine cavity. The ring is found behind the symphysis pubis and below the firm attachment of the peritoneum on the anterior uterine wall. Gilliatt [9] reported fourteen cesarean sections for intra-uterine rings in which the constriction ring was found to be about 1 inch (2.5 cm.) below the physiologic retraction ring.

Clinical experience demonstrates that the majority of intra-uterine rings are located behind the symphysis pubis. In my experience I have found the intra-uterine rings to be located behind the symphysis pubis and about 7 or 8 cm. above the external os. That intra-uterine rings are at or near the internal os is the opinion of Duncan,[10] Kehrer,[11] Veit,[12] Berkeley,[13] Polak [14] and Barbour.[15]

For this discussion, I shall assume, first, that the physiologic retraction ring at the onset of labor is found at the level of the superior border of the symphysis pubis, where I have observed it during the performance of elective cesarean section and where it has been observed by Smyly,[16] Lahs [17] and Reynolds [18] and, second, at the onset of and during the normal second stage of labor the physiologic retraction ring rises, so that it is from 6 to 8 cm. above the symphysis pubis.

It should also be pointed out, before discussing the location of the ring, that comparative physiology demonstrates that the fundal ring in the dog and sheep has the property of contraction and relaxation. The constriction rings or zones in the dog and rabbit have the property of contraction and relaxation. The physiologic retraction ring in the monkey has the property of contraction and relaxation. The fundal ring of the nongravid horn of the cow and sheep relaxes after the expulsion of the products of conception, and in the gravid horn the fundal ring reappears with labor and the musculature undergoes retraction.

LOCATION OF THE CONSTRICTION RING

The site of the constriction ring as related to the symphysis pubis is shown in table 1. Since in 75 per cent of the cases the ring is behind the symphysis pubis, from the foregoing data it must be assumed that the physiologic retraction ring is not the site involved.

TABLE 1.—*Location of the Constriction Ring*

A. Palpable internally in 246, or 91%	
1. Around the fetal neck, behind the symphysis pubis, in	186, or 75%
2. Around the body of the fetus, above the symphysis pubis, in	39, or 14%
3. Forelying (in front of the presenting part) behind the symphysis pubis, in	23, or 9%
B. Palpable externally in 24, or 9 per cent	

The confusion concerning terminology, especially of the junction between the upper and the lower uterine segments, will be briefly discussed.

1. *The Physiologic Retraction Ring.*—Since the junction between the two uterine segments is due to physiologic changes, it would be best to designate it as the "physiologic retraction ring," because the ring of Bandl was based on the frozen section of Braune, which was due to mechanical dystocia.

2. *Abnormal.*—(*a*) "The pathologic retraction ring" is the result of mechanical dystocia and an exaggera-

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the author's reprints.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

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tion of the "physiologic retraction ring," which is analogous to the ring of Bandl. This term is preferable because it connotes the physiologic changes in mismanaged cases of mechanical dystocia.

(*b*) The constriction ring is an annular contraction of the uterus which may occur at any level of the uterus and causes dystocia per se in the presence of normal cephalopelvic relation and position and presentation.

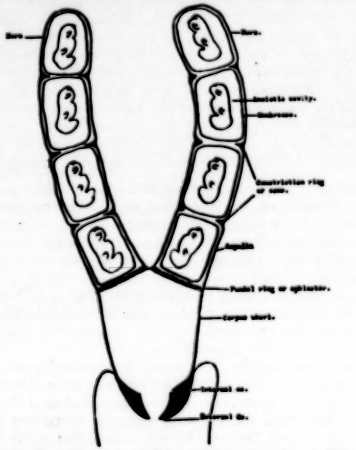

Fig. 1.—Pregnant uterus of the dog (uterus bicornis unicollis).

TYPES OF CONSTRICTION RINGS

On the basis of clinical experience and physiologic knowledge, two types of constriction rings may and do occur:

1. A spasmodic reversible constriction ring, which relaxes under the influence of anesthesia or incision, as is frequently observed when cesarean section is performed on these patients or after morphine and rest, after epinephrine or after death.

2. A permanent nonreversible constriction ring, which does not relax under anesthesia or drugs, or even after death, as in the cases reported by White,[19] Phillips,[20] Hannah and Massey,[21] Carson [22] and Michael.[23]

ETIOLOGY

A study of the 371 cases relative to age, parity, rupture of the membranes or bags, malposition and malpresentation, and drugs does not present any evidence that these factors played a rôle in the obstetric complication. Intra-uterine manipulations were studied. From the 318 cases reviewed, the stage of labor at which intervention was instituted was first stage in eighty-one, or 25 per cent; second stage in 237, or 75 per cent. It is noted that 25 per cent were interfered with during the first stage for indication to deliver on account of either the mother or the child. After studying these cases it would appear to me that the constriction ring dystocia was present in every instance before the intra-uterine examination.

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PATHOLOGY

Annular uterine rings are spasmodic and permanent. The spasmodic rings, on account of their temporary nature, cannot be studied histologically. Through the courtesy of White,[19] Phillips [20] and Hannah and Massey,[21] who have sent me a portion of their specimens, I have been able to study these rings, which I will discuss briefly.

The histologic examination demonstrates that the transverse muscle fibers are markedly more numerous and thicker than those found in the control sections. The longitudinal muscle fibers are definitely less numerous and show only a moderate degree of tortuosity; they are not as short and thick as those found in the control sections. These histologic changes are in keeping with the physiologic changes. That a permanent constriction ring is not due to spasm is indicated by the fact that it persisted after death or hysterectomy.

MECHANISM OF LABOR

When the constriction ring is in spasm, the movements of the passenger are arrested. The ring causes an incoordination of the uterus in which no change takes place in either the upper or the lower uterine segments. The constriction ring does not rise irrespective of the duration of labor but maintains a stationary position. The more essential points relating to the mechanism of labor, when the ring complicates the first or the second stage of labor, is as follows:

The First Stage.—The fetal head may be in an attitude of either flexion or deflexion. Since the movement of descent does not occur during the normal first stage of labor (descent during the first stage is due to the elongation of the lower uterine segment), the station of the fetal head has not the same significance as in the second stage. With a normal cephalopelvic relation the fetal head will be found loose in the pelvic cavity, because the uterine dysfunction caused by the constriction ring prevents the presenting part from coming into firm contact with the lower pole of the uterus for the normal mechanism of labor. Dilatation of the cervix may take place during the first stage of labor at a very slow rate, which is explained on the basis of intermittent relaxation of the constriction ring permitting coordination of the uterus for intermittent uterine changes (fig. 6).

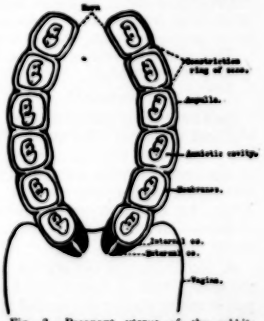

Fig. 2.—Pregnant uterus of the rabbit (uterus didelphys).

The Second Stage.—When the constriction ring persists or occurs after complete dilatation of the cervix, the effectiveness of the uterine contractions in causing the important movement of descent is arrested. Of course, the movement of internal rotation does not occur because of the incoordination of the uterus. As previously indicated, the uterus will not spontaneously rupture during the second stage of labor, irrespective

of the number of hours of labor, unless the labor is otherwise complicated. When the constriction ring relaxes, or rather the uterus begins to function normally, the normal physiology of the uterus effects a normal mechanism of labor (fig. 7).

DIAGNOSIS

In the presence of prolonged labor and in the absence of other causes of prolonged labor, my experience has caused me to make a speculative or an absolute diagnosis of a constriction dystocia. I consider the speculative diagnosis in all cases of prolonged labor. The absolute diagnosis can be made only by an intra-uterine examination and palpation of the constriction ring. This may account for the fact that I have observed or absolutely diagnosed only twenty-one cases of constriction ring dystocia.

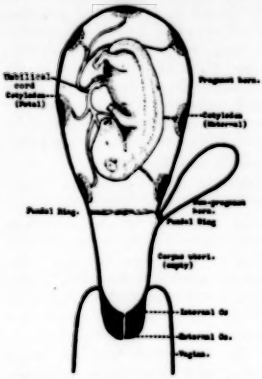

Fig. 3.—Early pregnant uterus of the Ungulata (cow).

My criterion for a constriction ring dystocia is a prolonged labor with a normal cephalopelvic relation, position and presentation in either the first or the second stage of labor, other possibilities being ruled out. The diagnosis of cephalopelvic relation, position and presentation should be made during the antepartum supervision and confirmed as soon as possible after the onset of labor in order to be prepared to manage a mechanical dystocia.

The diagnosis consists in the evaluation of the following observations:

1. Labor is prolonged.

2. The uterine contractions vary in frequency, intensity and duration. The uterus may manifest tetany of the upper and the lower uterine segment, or tetany in the upper uterine segment and atonia in the lower uterine segment during the first or the second stage of labor. In such instances a speculative or an absolute diagnosis of constriction ring dystocia will prevent hasty intervention.

3. No change in the station of the presenting part, associated with a looseness of the fetal head in the pelvic cavity during the second stage of labor, has been pathognomonic in my experience.

4. There is laxity of the cervix during a uterine contraction. The laxity of the cervix and the lower pole of the uterus is very characteristic, and at times pathognomonic, of a complicating constriction ring dystocia. During a uterine contraction the external os does not contract or become tense as during a normal uterine contraction. When a constriction ring is manifested during a prolonged labor with a persisting cervical dilatation of from 7 to 8 cm. and when an intra-uterine examination is made, it is noted that the hand can be easily passed through the external os during a uterine contraction. This phenomenon I have found present in all my cases during the first stage of labor.

During a uterine contraction, intra-uterine palpation demonstrates a flaccidity of the lower pole of the uterus, which coincides with the relative atonic stage of the cervix. When a constriction ring is located about the fetal neck, I have found the uterine wall from the constriction ring to the external os to be relatively atonic in either the first or the second stage of labor.

5. Exhaustion is frequently stressed as a complication of prolonged labor. I am firmly convinced that exhaustion is most often due to improper management of the parturient. If the parturient is properly managed, exhaustion will not be a factor of much account in either the morbidity or the mortality of the mother. I believe that puerperal sepsis and shock are much more likely to occur if the parturient patient is permitted to become exhausted by improper management.

PROGNOSIS

A review of the collected cases demonstrates the seriousness of a constriction ring dystocia. The maternal mortality of the 371 cases is fifty-four deaths, or 15 per cent. The causes of the deaths are given in table 2.

The fetal mortality of the 378 children is 172 deaths, or 46 per cent. In view of the operative difficulties of those who survived, one may speculate on the number of permanent disabilities.

In reviewing the 371 cases, it is noted that in 25 per cent of the cases intervention was done during the first stage of labor. It is also noted that in 154 cases, or 42 per cent, the primary obstetric procedure ended in failure and had to be terminated by some other

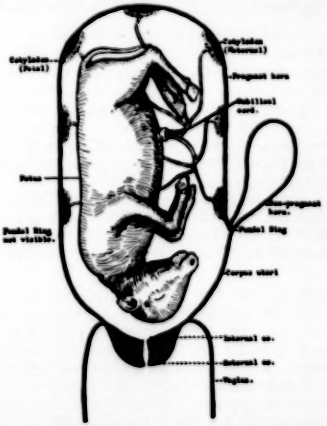

Fig. 4.—Late pregnant uterus of the Ungulata (cow).

obstetric procedure (table 3). A review of table 3 conclusively demonstrates the result of hasty intervention in both the first and the second stage of labor. I have no doubt that a proper evaluation of this obstetric complication, if managed by the conservative method, would have markedly decreased the maternal and fetal mortality.

In the 371 cases reported, operative procedures were resorted to in 97 per cent. A statistical study of the

different operative procedures gives valuable information of the danger of hasty intervention in constriction ring dystocia (table 4). The figures speak for caution in hasty operative intervention.

The recent increase in the performance of cesarean section in general necessitates a careful analysis of the indication of this procedure in this complication. Cesarean section, therefore, based on the speculative diagnosis of a constriction ring dystocia complicating a prolonged labor, would increase the incidence of cesarean section with the high maternal and fetal mortality that recent investigation has disclosed. A study of the statistics demonstrates that cesarean section per se is not the answer for the management of constriction ring dystocia, because in 75 per cent apparently diagnosis was made and intervention done in the second stage of labor when conditions were not favorable. I have not performed a cesarean section in the presence of either a speculative or an absolute diagnosis.

Version and extraction were performed in 142, or 38 per cent, of the reported cases. The results demonstrate the seriousness of this procedure. I have performed two successful versions and extractions in constriction ring dystocia and one in which the patient died from shock. On evaluating the literature and my own experience, and being successful with less radical procedures, I have not employed this procedure since.

TABLE 2.—*Causes of Death*

	Number	Per Cent
1. Shock and exhaustion	28	52
2. Sepsis	11	20
3. Ruptured uterus	6	11
4. Porro cesarean section	5	9
5. Eclampsia	2	4
6. Labor pneumonia	2	4

I would resort to this procedure only under very exceptional circumstances.

Forceps delivery was the method of choice in 137 cases, or 37 per cent. The results demonstrate the care necessary in evaluating the conditions present, for besides the mortality (table 4) and the failed forceps cases (table 3), a review of the literature on "failed forceps" and my own "failed forceps" cases may explain the cause of my failure.

In the light of my experience I believe that the prognosis for the mother and child can be markedly improved by a conservative management of a prolonged labor complicated by a constriction ring. In some cases failed forceps or contemplated cesarean section was followed by a spontaneous delivery or an easy low forceps operation. I have managed patients with prolonged labor on a speculative diagnosis with gratifying results, which is my practice today. I believe that with a conservative management the maternal mortality should be less than 2 per cent and a fetal mortality of not more than 15 per cent for constriction ring dystocia.

My experience consists of twenty-one cases (ten other cases since the foregoing statistics were compiled) in which an absolute diagnosis of constriction ring dystocia was made during the first and the second stage of labor. The following cases are typical in my experience:

CASE 1.—W. J., a primipara, aged 20, a Negress, whose history was of no importance, had her last menstrual period Nov. 20, 1934, and expected labor Aug. 27, 1935. She entered the Cook County Hospital Sept. 4, 1935, with the onset of labor at 12 a. m.

On examination at 3 a. m. the general condition was good. The cervix was partially effaced and the canal admitted a finger. Station was zero. Uterine contractions were irregular. The fetus was in the right occiput anterior position. Fetal heart tones were 140.

At 2 p. m. cervical dilatation was from 6 to 7 cm. Station was zero. Fetal heart tones were 140 and of good quality. There were uterine contractions every five minutes.

TABLE 3.—*Operations Ending in Failure*

			Mortality			
			Maternal		Fetal	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Forceps	96	70	26	27	68	69
Version and extraction	30	21	10	33	20	67
Manual dilation	10	36	2	20	11	36
Craniotomy	15	45	8	46	15	..
Embryotomy	3	38	2	66	3	..
Total	154	42	48	41	121	78

Failure in a primary obstetric procedure in 154 instances, or 42 per cent.

September 6, at 7 a. m., cervical dilatation was from 6 to 7 cm. Station was at zero. Fetal heart tones were 140 and of good quality, with uterine contractions every five minutes. The medical regimen for exhaustion was instituted. The acetone test was negative.

September 7, at 7 a. m., the patient was showing the strain of the labor. A sterile vaginal examination was made: cervical dilatation was 8 cm. The station was plus one. The cervix was thick and loose during a uterine contraction. A large caput was present. Intra-uterine examination revealed a constriction ring around the fetal neck. The patient was given morphine and scopolamine, and intravenous dextrose.

At 7:57 p. m. 10 minims (0.6 cc.) of epinephrine was given subcutaneously. Within a few minutes the fetal head descended to plus three.

At 8:30 p. m. the fetal head began to crown. An episiotomy was followed by a spontaneous delivery of a colored male child weighing 7½ pounds (3,400 Gm.).

At 8:43 p. m. there was a spontaneous delivery of the placenta.

The mother and child were discharged from the hospital, September 16, after a normal postpartum course.

CASE 2.—M. S., a Negress, aged 27, a secundipara, whose history was of no importance, had her last menstrual period June 10, 1934, and expected labor March 17, 1935. She entered the Cook County Hospital March 16, 1935, with onset of labor March 15, at 10 a. m.

The general condition of the patient was good. The temperature was 98.6 F., the pulse 94, and the blood pressure 90 systolic, 50 diastolic. The uterus was at term. Fetal heart tones were 146 and of good quality. Cervical dilatation was 6 cm. and the membranes were intact. There was slight vaginal bleeding. The presenting part was floating. There was cephalic presentation.

TABLE 4.—*Mortality*

			Maternal		Fetal	
Operation	Number	Per Cent	Number	Per Cent	Number	Per Cent
Forceps	137	37	31	23	82	60
Manual dilation	28	8	2	7	13	47
Version and extraction	142	38	26	18	81	57
Cesarean section, total	87	23	29	33	27	31
Primary cesarean section	36	41	8	22	5	14
Late cesarean section	34	40	11	32	12	35
Porro cesarean section	17	19	6	35	10	60
Craniotomy	33	9	16	49	..	..
Embryotomy	8	3	2	25	..	..

March 17, at 9 a. m., cervical dilatation was 6 cm. There were irregular uterine contractions. The uterus was in tetany, so a mild premature separation of the placenta was suspected.

At 5:30 p. m. a sterile vaginal examination was made. Cervical dilatation was 8 cm. The cervix was relaxed. Intra-uterine examination showed a thick definite ring of firm con-

sistency 5 or 6 cm. above the external os and the presenting part above the ring, which was behind the symphysis pubis. There was no vaginal bleeding. The membranes were intact.

At 9 p. m. rectal examination showed that the presenting part was floating. Ten minims of epinephrine was given, followed in one hour by morphine and scopolamine. The routine medical regimen was given for exhaustion.

March 18, at 4 a. m., there was spontaneous delivery of an eight months' living child.

The postpartum course was normal and the mother and child were discharged on the tenth postpartum day.

TREATMENT

The management of constriction ring dystocia is that of a prolonged labor. The basic principle is to maintain the parturient patient's mental and physical condition in order to prevent exhaustion as a complication in the first stage and to permit art to assist the parturient in the second stage, if necessary.

The First Stage of Labor.—The treatment may be termed "intelligent expectancy" (De Lee). The labor is considered to be prolonged at eighteen hours after the onset of labor when the state of the cervix gives one the impression that the first stage will be prolonged; the state of exhaustion must be anticipated and the treatment instituted to prevent exhaustion.

The Medical Regimen for Exhaustion.—At the end of eighteen hours the urine is tested for acetone, the test being repeated every twelve hours. The diet, soft or liquid, should consist of 3,000 calories of food rich in carbohydrates, and 2,000 cc. of water for each twenty-four hours of the labor. The patient should be fed every three or four hours. With persuasion she will cooperate. She should receive sufficient sedatives to ensure adequate rest or sleep. This management will prevent exhaustion as a complication of a prolonged labor. A negative acetone test throughout a prolonged labor should be the criterion for the proper management.

The parturient is conservatively managed until the second stage is reached, which may require from twenty-four to 100 hours. However, one must be continuously alert and diagnose any complication that may endanger the mother or child. The complication determines the indication for change in management.

A review of reported cases shows that in eighty-one, or 25 per cent, intervention was done during the first stage, with a maternal mortality of ten, or 13 per cent, and a fetal mortality of forty-four, or 56 per cent. These figures speak against operative intervention in the first stage. Dührssen's incision is condemned in this complication, as it is the constriction ring and not the cervix that is obstructing the descent of the fetus.

The Second Stage of Labor.—When the second stage is complicated by a constriction ring, intervention should not be gaged by the number of hours but rather on the condition of the parturient or the fetus for the indication.[24] There is no evidence showing that the uterus will rupture spontaneously, irrespective of the number of hours in labor.

When to resort to operative intervention in prolonged labor depends on the conditions governing the indication rather than on the time element of the second stage. When the functional dystocia in the second stage is manifested by inertia uteri, operative intervention at the end of two or more hours yields excellent results; but when a constriction ring dystocia is diagnosed, operative intervention must be very carefully weighed before proceeding.

The conservative management of a constriction ring dystocia will be illustrated by citing two cases, in which a speculative diagnosis was made during the first stage and an absolute diagnosis was made during the second stage. In the first case, after two hours in the second stage a trial of delivery with the forceps was made, but when too much resistance was encountered the forceps was removed. An intra-uterine examination disclosed a constriction ring around the fetal neck from 7 to 8 cm. above the external os. The patient was given morphine and scopolamine, as indicated, and after twenty-four hours in the second stage a spontaneous delivery of a living child was obtained with no morbidity to the mother during her postpartum period. In the second case an absolute diagnosis was made after two hours in the second stage. Morphine and scopolamine were given as indicated. At the end of eighteen hours the fetal head had descended from plus one to plus three, where it remained for one hour. Then the labor was easily terminated by low forceps with a living child and no maternal morbidity.

If the constriction ring does not relax on waiting or on giving morphine and scopolamine, other pharmacologic agents are resorted to.

Anesthesia is a fundamental requirement in all operative procedures and should give the greatest degree of relaxation of the constriction ring. The usual anesthetic agent is ether, although I prefer chloroform if it can be properly and safely administered. It should be administered to the point of deep surgical anesthesia and at times fairly well prolonged in order to secure the maximal effect on the constriction ring. Ethylene, nitrous oxide and oxygen from my experience do not appear to be favorable for the relaxation of the constriction ring. Atropine and cocaine have been used with no success. Amyl nitrite has been used with some success. The value of epinephrine, as advocated by Rucker,[25] has been demonstrated. Rudolph and Ivy[7] and Ivy, Hartman and Koff[6] demonstrated that it would even diminish uterine activity initiated with solution of posterior pituitary. I have had some excellent results by its use and some failures. My routine procedure with epinephrine is as follows: Before the subcutaneous injection of epinephrine, the hand is introduced into the uterus, so that the dorsal aspect of some of the fingers is in contact with some portion of the constriction ring. Ten minims of epinephrine is injected. I wait a few minutes to determine the effect on the constriction ring. If no relaxation is evident, I give another injection of 5 minims (0.3 cc.) and wait fully five minutes. If at the end of five or ten minutes I find no evidence of relaxation of the constriction ring, the anesthesia is stopped and the parturient patient is treated by the conservative management. If evidence of relaxation of the constriction ring is obtained, delivery is accomplished either with the forceps or by version and extraction, preferably by forceps.[2]

CONCLUSIONS

1. Intra-uterine rings frequently complicate prolonged labors.

2. The intra-uterine rings are found at different uterine levels, so that the designation of contraction of the ring of Bandl, contraction ring dystocia and retraction ring dystocia is not tenable.

3. Constriction ring dystocia is suggested for this complication on biologic grounds.

24. Rudolph, Louis: Am. J. Obst. & Gynec. **25**: 840 (June) 1933.

25. Rucker, M. P.: Am. J. Obst. & Gynec. **14**: 609 (Nov.) 1927.

4. The diagnosis is either speculative or absolute.

5. The criterion of an absolute diagnosis consists of a prolonged labor, no change in the station of the presenting part in the second stage of labor, looseness of the fetal head in the pelvic cavity, relaxed cervix during a uterine contraction, and intra-uterine palpation of the constriction ring.

6. The majority of constriction rings are found behind the symphysis pubis and from about 6 to 8 cm. above the external os.

7. In a normal cephalopelvic relation, position and presentation delivery by the vagina is the safest for mother and child.

8. The management of a prolonged labor should consist in the prevention of maternal exhaustion by a sufficient intake of food, water and rest for each twenty-four hours of the labor. A negative acetone is the criterion of a well managed parturient.

9. The conservative management bespeaks no operative intervention until the constriction ring has relaxed, leaving out indications that may point to intervention for either mother or child.

10. A conservative management should result in a maternal mortality of less than 2 per cent and a fetal mortality of less than 15 per cent.[26]

55 East Washington Street.

ABSTRACT OF DISCUSSION

DR. M. P. RUCKER, Richmond, Va.: I am in hearty agreement with the author as to the diagnosis. When labor is prolonged and there is no obvious reason for it, a constriction ring is to be suspected. The character of the uterine contractions is characteristic: they are painful and ineffectual, often irregular, and the presenting part does not fill the lower uterine segment even during a contraction. Absolute diagnosis, of course, can be made only with the examining hand in the uterus. In the treatment I have been influenced by the fear that the constriction ring would grow continuously worse, and I have therefore attempted to deliver the patient as soon as I have made the diagnosis. In accomplishing this, the subcutaneous injection of epinephrine has been of great help. Only once has it failed me in relaxing the constriction ring. Of my 112 cases, thirty occurred before I began the use of epinephrine and eighty-two after that time. My own maternal death occurred before the advent of epinephrine. The only Porro section was in a case in which the epinephrine failed me. In the light of Dr. Rudolph's work, this probably should have been treated more conservatively. I have had thirty-one fetal deaths in the whole series, a fetal mortality of 27.7 per cent. In the thirty cases before the epinephrine, there were eleven fetal deaths, or 36 per cent, and in the eighty-two cases after the advent of epinephrine there were twenty fetal deaths, or a mortality of 19 per cent. My largest group, of fifty-three cases with ten fetal deaths and no maternal deaths, approaches Dr. Rudolph's ideal figures for conservative treatment; that is, 2 per cent maternal mortality and 15 per cent fetal mortality. I am of the opinion, therefore, that if the constriction ring relaxes with epinephrine one should deliver that patient in the most conservative manner possible; otherwise one should follow the conservative plan as outlined by Dr. Rudolph.

DR. W. T. PRIDE, Memphis, Tenn.: My terminology is different from Dr. Rudolph's. I tried to establish the fact that there is a difference between a constriction ring and a retraction ring. Some years ago the late Dr. Williams proved conclusively that long muscle fibers from the uterus, when stimulated, would contract at any portion. This proved conclusively that Bandl's ring was a contraction ring and that it can occur at any portion of the uterus. On the other hand, a retraction ring always occurs in the same place, at the junction of the upper and lower uterine segments, for the reason that these long fibers retract, pulling the short circular fibers, apparently trying to expel the fetus from within. Instead of it occurring at the internal ring, it contracts the circular fibers and pulls them in. It is like closing a tobacco sack; it shuts down around the presenting part. This defines a retraction ring from a contraction and constriction ring, in that the upper portion of the uterus is very tens and not only very tense but painful. A constriction ring, according to my idea, is like a string tied around the middle of the uterus or the lower part of the uterus: it is soft above and soft below. It is a matter of time when relaxation occurs and the patient is in no danger. With a retraction ring one could not expect to relax the upper portion without relaxing the lower; therefore, whenever the tenseness of the uterus disappears, the ring has disappeared. I feel that the maternal death rate has been too high. In a series of 118 cases looked up before the meeting there was no maternal death rate. The fetal death rate was about 12 per cent. I feel that in time this ring and its treatment will be understood. I am having very little trouble with retraction rings because I am giving complete analgesia.

DR. PERCY RUSSELL, Memphis, Tenn.: I agree heartily on the question of diet. However, I insist that the nurses feed these patients every two hours with a liquid diet containing 300 Gm. of carbohydrates, 125 Gm. of proteins and 75 Gm. of fats. The fluid intake is approximately that of Dr. Rudolph's. Most of the nonresident cases that come into the John Gaston Hospital present abnormal presentations or prolonged labors. Often, but not always, do these patients have a retraction ring on admission. I notice in Dr. Rudolph's paper that this possibility should be taken into consideration in antepartum care; I do not believe it necessary if proper management is given during labor. There is one point which I should like to stress and that is the question of lactic acid acidosis. When a muscle is in tetanic contraction, lactic acid accumulates in that muscle. The result is a cramping of that muscle. I try to prevent this lactic acidosis. When a patient comes in with a constriction or retraction ring, as I prefer to call it, she is given either 1 or 2 per cent sodium bicarbonate solution, from 200 to 250 cc., provided she has had no dextrose previously. If that is the case, or, if the patient is given intravenous dextrose or a hypodermoclysis of dextrose solution, she is treated for lactic acidosis with one ampule of Hartmann's solution diluted to 500 cc. For the criterion I do not use an acetone determination on urine. I use the diacetic acid test, as well as the carbon dioxide combining power of the blood. Without fail I have found that within three or four hours a retraction, constriction or contraction ring, as one wishes to call it, will release. The patient will deliver and live. Dr. Pride has mentioned the maternal mortality as nil. The fetal mortality, of course, is greater. The manner of emptying is spontaneous, and seldom is it found necessary to undertake operative procedures, unless there be an abnormal presentation.

DR. LOUIS RUDOLPH, Chicago: Dr. Pride brings up the polemic of the lower uterine segment. The frozen sections of Bumm and Blumreich and of Holland have confused the polemic. It will be essential to study the lower uterine segment on the basis of comparative anatomy and physiology in order to give enlightenment on the location of the physiologic retraction ring at term and at various stages of labor, and its relation to the constriction rings. In some cases reported, I note permanent constriction rings which are not related to the longitudinal muscular changes of the uterus, so that there is no evidence from frozen sections or from living pathologic specimens that the human uterus has the property of transverse contraction, except to correlate comparative anatomy and physiology (particularly of the dog and rabbit) to understand transverse contraction of the human uterus. The biologic basis of this complication as a constriction ring dystocia appears to be sounder than the controversial polemic of the ring of Bandl, constriction ring of Schroeder, or the retraction ring of Barbour and Lusk. Dr. Russell has raised the very important point of lactic acid. I wish to emphasize this point: Constriction ring dystocia occurs early in labor when inanition, dehydration and loss of rest or sleep is not a factor. This complication is rather the underlying cause of the prolonged labor and is due to a pathologic functioning of the uterus,

26. This subject was completely discussed and the treatment recopied from my paper in the Journal of Obstetrics and Gynecology of the British Empire 42:992 (Dec.) 1935.

which in the majority of instances is a temporary state. When a prolonged labor is mismanaged by lack of food, water and rest or sleep, increased catabolism of the skeletal musculature with excessive formation of lactic acid takes place. The acidosis present is due to improper management of the parturient, and the uterus per se plays a very minor rôle in the process. Exhaustion during labor must be anticipated and prevented by the medical regimen that I have outlined.

TULAREMIA

REPORT OF A FULMINANT EPIDEMIC TRANSMITTED BY THE DEER FLY

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Tularemia is a disease that does not usually occur in epidemic form. Ordinarily one sees only sporadic cases or at most only a very few cases infected from the same source. But with conditions sufficiently favorable it is a disease that may assume epidemic proportions. This study concerns such a situation, which arose in a Civilian Conservation Corps camp in northern Utah during the summer of 1935.

The history shows that this camp consisted of about 170 enrollees located on the treeless plains north of Great Salt Lake. The men were engaged largely in road construction, and because of the excessive heat many of them worked without shirts or other covering above the waist. July 11 one of the enrollees appeared on sick report with fever, headache, general malaise and enlarged tender lymph nodes in the right supraclavicular area. Approximately twenty-four hours later a punched-out, sloughing ulcer about 1 cm. in diameter developed in the posterior cervical region. A few similar cases appeared during the next ten days, the only variation being in the location of the ulcers, on the neck, shoulders, back, arms or face and in the involvement of the corresponding regional lymph nodes. The cases gradually increased in number until during the eight day period, from July 23 to 30, there were seventeen admissions for the disease. On the latter date movement of the camp to a more favorable location was begun, after which only two additional cases appeared. During the acute stage the patients were hospitalized in local hospitals in Brigham City and Tremonton. It is of interest to note that this is the same Brigham City from which Dr. R. A. Pearse made the first report of human cases of tularemia in a paper read before the Utah State Medical Society in 1910. Following the acute phase of the disease the patients, thirty in all, were assembled and transferred in one group to Letterman General Hospital for further observation and hospital care. After detailed laboratory studies and several weeks of clinical observation, final diagnoses of tularemia were made in twenty-six cases. Another CCC enrollee was in the hospital at the time with tularemia. He had acquired the disease at a camp in Mississippi just before the transfer of his company to California. A young woman, now under observation, apparently acquired the disease a few months ago during a short winter vacation in a tourist camp in the Sierra Nevada Mountains. The last two cases showed primary lesions near the knee with inguinal adenitis. The offending insects were not identified. Although a total of twenty-eight cases form the basis of this study, the epidemic feature applies only to the disease as it occurred in the Civilian Conservation Corps camp in northern Utah.

Study of these twenty-eight cases showed twenty-seven to be of the ulceroglandular type. One that showed no primary lesion was classified as glandular.

The location of the primary lesions proved to be very interesting. In the ulceroglandular type of tularemia the ulcer usually occurs on the finger or hand where infection occurs through contact with an infected rabbit or other infected material. In this group none had primary lesions on the fingers or hands and only one a lesion on the arm below the elbow. Two patients each had two primary ulcers. A few had one or more secondary lesions appearing near the main primary, apparently caused by killing the offending insect or spreading the infection by scratching soon after the bite. Of the twenty-nine primary lesions, twelve were located on the back, six on the shoulders, five on the arms, three on the legs, two on the neck and one on the chin. The unusual preponderance of initial ulcers on the back and shoulders is explained by the enrollees' habit of working without shirts.

In most cases the primary ulcer appeared from twenty-four to forty-eight hours after the onset of the illness, but in some the ulcer, fever, general malaise and regional lymphadenitis developed simultaneously. The pain and tenderness involved the glands, the periglandular tissues and the intervening regions between the primary lesions and the lymph glands to which they drained.

Their temperature charts showed rather similar curves, usually a high initial rise, above 104 F. in some cases, followed by remissions and less marked secondary and tertiary elevations. The temperature usually remained normal after the third week, though several still showed febrile periods above 102 F. as late as the sixth week. Our most recent case is still in the hospital presenting elevations of temperature of one degree three months after onset.

The patient with no primary lesion had right axillary nonsuppurative adenitis. In one with the inoculation on the leg inguinal and later axillary adenitis developed, all on the same side of the body. Both groups of glands in the latter case eventually broke down and required incision. All other cases showed regional lymphadenitis but in no case was there general glandular involvement. Sometimes two groups of glands showed reactions to a single primary lesion; i. e., the axillary and supraclavicular to a single ulcer on the shoulder. The glands varied in size from that of an almond to that of a small orange. Some of them remained tender and eventually suppurated as late as four months after the onset of the disease. Sixteen of the twenty-eight cases required incision of one or more glands.

Treatment consisted largely of rest, generous feeding, surgical drainage of suppurating glands and general ward care. Five cases were treated with Foshay's serum, 12.5 cc. intravenously on two successive days. Five other cases were treated with 1 per cent mercurochrome in 7.5 per cent dextrose solution intravenously, 5 cc. gradually increased to 10 cc. every other day for five doses, the course being repeated after an interval of ten days. These patients received their serum or mercurochrome during the sixth to the eighth week.

From the Letterman General Hospital.

The authors are indebted to Dr. Karl F. Meyer, director of the Hooper Foundation for Medical Research of the University of California, He placed the facilities of the foundation at their disposal, contributed freely of his own time in seeing the patients and offered many valuable suggestions in carrying out the study.

There was no evidence to show that either type of treatment modified the course of the disease. In view of the excellent results reported by Foshay it is regretted that some of this group were not given the specific antiserum early during the acute stage. Suppurating glands were usually incised only after they showed definite fluctuation. An attempt was made in a few cases to avoid incision by aspirating and washing out with physiologic solution of sodium chloride the large, soft, fluctuating gland masses. It proved successful in three cases but in some instances the procedure was followed by a febrile reaction and even a chill. Two patients whose adenitis persisted for unusually long periods were treated with high voltage roentgen therapy.

The average period of hospitalization for the entire group was ninety-eight days, for the serum treated cases 100 days, and for those treated with mercurochrome 101 days. These periods of hospitalization are considerably longer than one would expect in civil practice, where the matter of expense and the necessity of earning a livelihood would prevent such prolonged hospital care. There were no deaths. All the enrollees, twenty-seven in number, were finally restored to duty. They showed an average gain in weight of $7^{85}/_{100}$ pounds (3,560 Gm.) while under observation.

The laboratory tests to which they were subjected gave very significant results. Nearly all the patients had three tularense agglutinations, one in the second or third week, during the acute phase of the infection, a second during the fifth to the eighth week, and a third during the ninth to the eleventh week of the disease. The early agglutinations were done by the macroscopic method, and in only one dilution, 1:40. Notwithstanding this low dilution, some cases, which later showed very strong agglutinations, were negative. Others were feebly to strongly positive. From the fifth to the eighth week complete agglutinations were obtained in every case in dilutions of 1:160 up to 1:1,280, with an average of 1:650. The later agglutinations, i. e., during the ninth to the eleventh week, were usually, though not always, weaker, the average titer in which complete agglutinations were obtained being 1:370.

Melitensis agglutinations and complement fixation tests were also performed. Only two suggestive results were obtained, a moderately strong melitensis agglutination in a dilution of 1:160, with a negative complement fixation test in one patient, and a strongly positive complement fixation test, with a negative agglutination test in another. Neither case gave a history of any previous illness suggesting undulant fever.

Skin sensitivity tests were performed with equally interesting results. One-tenth cubic centimeter of nitrated tularense antigen, containing approximately ten million organisms, was injected into the skin of the forearm, and the reactions were read after forty-eight hours. Nearly all cases gave strongly positive results, the reactions being considered negative in only three instances. In two of these negative cases the agglutination titer at the time was 1:160; in the third the agglutination was negative.

In discussing the treatment of tularemia, Foshay states that his antiserum has a specific desensitizing effect. In our patients it was found that those treated with Foshay's serum showed more rapid diminution in agglutinative titer and less marked reactions to Bacterium tularense antigen intradermally than those not so treated. Though our results were not striking, they were in line with Foshay's observations.

Because of the characteristic lymph gland involvement found in granuloma inguinale, it appeared possible that some relationship between it and our cases of tularemia with lymphadenitis might be demonstrated. Intradermal tests with Frei antigen prepared from granulomatous lymph glands were done. All the tests were negative, indicating so far as this limited study was concerned no relationship between the two diseases.

Several attempts were made late in the disease, during the sixth to the eighth week, to recover Bacterium tularense from abscessed lymph glands. Pus aspirated with a Luer syringe was injected repeatedly into guinea-pigs. Abscessed lymph glands were emptied by aspiration, gently massaged to break down partially the surrounding abscess wall, again aspirated, and the bloody necrotic material used for cultural experiments and guinea-pig inoculations. And in a further effort to obtain the organism, swollen but nonsuppurating glands were aspirated, and the serum obtained was subjected to similar tests. The results were always negative. They support the clinical observation that there is little danger to the physician who handles such cases.

It appears reasonable to attribute the transmission of the disease in this epidemic to the deer fly. This insect is a proved vector of the disease. Past experience has shown it to be the principal means of transmission in Utah. The patients stated that deer flies had become much more prevalent a week or two before the first enrollee became ill with tularemia. The flies were so numerous that each enrollee suffered not one bite but many bites every day. In many instances hard biting flies were instinctively slapped and crushed on the skin. Jack rabbits were also numerous; many were found dead without evidence of violence and others appeared sluggish and in poor condition. It is significant that nearly all the enrollees infected were young men, working stripped to the waist at some distance from camp, that older, less vigorous men employed in the camp itself as overhead personnel, about thirty-five in number, kept their shirts on, and that of this number who were not continuously out on road and dike work none contracted the disease. In other words the vector was some biting insect that attacked the bare skin of men at work away from camp, where sick rabbits were in evidence and deer flies numerous.

None of the enrollees had eaten rabbit flesh, but thirteen of the victims had killed rabbits or played with dead ones. One enrollee had even removed the ears and had carried them in his pocket for "good luck." Yet not one patient showed a point of infection on the fingers or hands. That ticks were not responsible is shown by the location of nearly all the primary lesions on the uncovered portions of the body, and not on the thighs, perineum or lower part of the abdomen.

Mosquitos were prevalent. A sanitary inspector in a report made early in June commented on the number of mosquitos and stated that mosquito bars, head nets and gloves were all necessary. Had mosquitos been a major factor in transmitting the infection, cases would probably have appeared at an earlier date. The belief that mosquitos were not important as vectors of the disease is in accord with the observations of Philip, Davis and Parker of the United States Public Health Service, who, after conducting a series of careful experiments on the transmission of tularemia by mosquitos at the Rocky Mountain Spotted Fever Laboratory, Hamilton, Mont., reached the conclusion that in nature the mosquito transmission of tularemia is rare. The method of infection of the young woman who

acquired the disease while enjoying winter sports in the Sierras late in January is not so clear. She became ill the day of her homecoming, developed a typical ulcer on the lateral surface of the right knee with a right inguinal bubo the size of an egg, and had an intermittent fever lasting three months with elevations above 104 F. during the early weeks. Her blood serum shows a strong agglutination of B. tularense in a dilution of 1 to 640. She occasionally eats rabbit flesh, prepared and cooked by a maid. But she had consumed no rabbit flesh for some weeks prior to the onset of her illness. It appears likely that she acquired the disease through the bite of a bedbug or tick in her winter cabin in the Sierras.

COMMENT

1. The experience recorded shows that under favorable conditions tularemia may assume epidemic proportions.

2. Unless proper precautions are taken, the success of military operations and construction projects in highly infected regions may be jeopardized.

3. Danger of acquiring the disease through contact with the pus from suppurating glands is negligible.

4. Skin sensitivity tests with B. tularense antigen proved to be a valuable diagnostic procedure.

5. Even during the winter months, insect transmission of the infection appears to be possible.

THE INJECTION TREATMENT OF HERNIA

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Critical evaluation at this time of the injection method of treating hernia is highly desirable. It is my belief at present that by this means permanent cure can be effected, but only in suitable, selected cases.

The physician is under strong pressure from many sources to employ this form of treatment. Syndicated newspaper articles [1] have appeared instructing the public that the treatment is established, that the physician who does not employ it is backward, and that it is opposed by the orthodox profession because it is new and hence unorthodox. The patient of course seeks to avoid an operation, is ready to refuse surgical advice and is eager to pay much money for any promise of other cure. To illustrate the attitude of the public and not otherwise to be compared, a concern in St. Louis, recently debarred from the mails,[2] had gross receipts up to $250,000 a year and many testimonials for a rupture cure that was essentially a piece of adhesive plaster and a little ointment to be applied on the skin. The physician for many reasons is impelled to wish for such a nonoperative treatment. A cynical and false one was mentioned by Dr. Carroll,[3] who, in discussing fads before the New York State Medical Society in 1889, said "Just as a man always comes when circumstances arise that demand his services, so fads come when it is necessary for the young practitioner to increase his income."

Pharmaceutical houses, by advertisements in journals, in the mail, and through detail men quote almost 100 per cent cures with the injection treatment, if their formulas are used, with a simple, bloodless, painless, easily learned procedure requiring only a few short office visits, practically no equipment, which does not interfere with the patient's work, eliminates hospital and disability expenses and generally has all the advantages and none of the disadvantages of open operation.

Today, as earlier, reprints of some of the published articles are included in the advertising matter or are referred to as supportive evidence of the scientific status of the treatment and of the solution. Only the trade name of the solution may be mentioned by the author of the article, and the formula even kept secret.[4] Many of the solutions are irrationally complex, if not of uncertain composition.[5]

Historical accounts are included in practically all articles written on the injection treatment of hernia. As a legitimate function, such a historical background serves first to provide a proper approach to the subject under consideration. It may also be of value to lend the weight of authority, of numbers of authors, and of otherwise notable, reputable names of men who have written about the treatment. Such names serve as "character witnesses" for respectability and frequently are included indubitably to influence the reader favorably. On the other hand, historical accounts and bibliographic references as first given by Mayer [6] may be erroneous and misleading, although not necessarily intentionally. Subsequent articles, even in the better journals, indicate simple repetition of references with undue elaboration. For example, Manley [7] who in his book on hernia most conservatively discusses the injection method, becomes one who made further contributions.[8] Marcy,[9] who two years before Manley dealt with the subject in a superior classic monograph on hernia, is referred to but rarely. The frequent mention of Manley by so many writers is apparently due to the reference by Mayer. In the same manner apparently Ripley,[10] who does not even mention the injection method, becomes an author on the subject.[11] Similarly Janney, although quoted by Warren [12] and Mayer, never actually wrote but is frequently referred to as an author.[10]

Velpeau [13] of Paris is mentioned in all such articles as the first to introduce the method in 1837 and, therefore, presumably recommended the treatment. As a matter of fact, Velpeau attempted the procedure in all a total of three times, specifically reported it as only experimental, and immediately abandoned it as a method of cure. Similarly, while it is true that Pancoast,[14] professor of surgery at Jefferson Medical College,

From the Hernia Clinic, Department of Surgery, Michael Reese Hospital.

1. Brady, William: Chicago American, June 14, 1935.
2. Plapao Laboratories, Inc., Bureau of Investigation, J. A. M. A. **106**: 557 (Feb. 15) 1936.
3. Carroll, A. L.: Discussion on "A Few Fads," Tr. New York State M. A. **6**: 84, 1889.
4. Coe, G. D.: Letter to Editor, Office Practitioner, J. D. Albright, 1910. Winters, R. A.: Injection Treatment of Congenital Hernia, Clin. Med. & Surg. **42**: 563 (Nov.) 1935.
5. Pino Mestre, Enrique: Las injecciones proliferantes obturadoras en las hernias, Laboratorio **11**: 3719 (Sept.) 1927; abstr. J. A. M. A. **89**: 816, 1927 (Edicion Español). Fowler, S. W.: Experience with the Injection Treatment of Hernias, M. Rec. **141**: 207 (Feb. 20) 1935.
6. Mayer, Ignatz: The Treatment of Hernia by Subcutaneous Injection, M. J. & Rec. **125**: 528 (April 20) 1927; **125**: 596 (May 4), 672 (May 18) 1927; **128**: 415 (Oct. 17) 1928; **129**: 71 (Jan. 16) 1929; **131**: 90 (Jan. 15) 1930.
7. Manley, T. H.: Hernia, Philadelphia, Medical Press Company, 1893.
8. LaRochelle, F. D.: Treatment of Hernia, Am. J. Surg. **16**: 501 (June) 1932.
9. Marcy, H. O.: The Anatomy and Surgical Treatment of Hernia, Boston, D. Appleton & Co., 1892, p. 308.
10. Ripley, C. B.: Splitting the Cord in Indirect Inguinal Hernia, Illinois M. J. **43**: 223 (March) 1923.
11. McMillan, W. M., and Cunningham, D. R.: The Injection Treatment of Reducible Hernia, J. A. M. A. **106**: 1791 (May) 1936.
12. Warren, J. H.: Hernia, Strangulated and Reducible, Boston, Charles N. Thomas, 1881.
13. Velpeau, Alfred: New Elements of Operative Surgery, Paris, 1839, vol. 3, translated by P. Townsend, New York, S. & W. Wood, 1851.
14. Pancoast, Joseph: A Treatise on Operative Surgery, Philadelphia, Carey and Hart, 1844.

reported having eight years previously treated thirteen cases, he also stated that he did not follow the cases longer than a few months, did not deem the method of sufficient importance for special publication, and in a very short time abandoned the treatment. Heaton [15] wrote a book on the injection treatment of hernia. He received European honors, specialized in his own "rupture" hospital in Boston, claimed hundreds of cures, and amassed a fortune. He was in disrepute with the American Medical Association because he kept his treatment secret. His claims were not accepted at the time,[16] and when he finally published his book it revealed unique ideas concerning anatomy and pathology. He was considered a "blatant and notorious charlatan" by Manley, and his only disciple, Warren,[12] admitted exaggerated claims on the part of Heaton. Nevertheless, he apparently did obtain a certain number of cures with his fluidextract of white oak bark. No reputable writer of that time or later accepted his work, although lack of such acceptance by the ethical profession as a whole did not, of course, result in its oblivion. The treatment by injection was taken up by innumerable quacks, and indiscriminate use resulted in deaths.

Reminiscent of the present trend, Warren [12] wrote and talked much in the years 1881 to 1884 and published his first paper within a few months after his first injection, and a book on the subject within a year. Similarly Schwalbe [17] in 1875 in Germany, who had used 70 per cent alcohol as a sclerosing agent, hastened to publish descriptions of his cases, and his first article reports three cures. His second paper cites four cases, two still under treatment. He later reported a large percentage of cures in many more cases. Many single case reports appeared, usually with a change in the chemical employed. Perhaps an extreme instance of the desire simply to innovate and to write is the use, as the injection material, of a Bacillus pyocyaneus culture.[18] Enthusiasm flamed and subsided; the articles published remained to be quoted.

STATISTICS OF CURE

On the other hand, articles have appeared in the past few years in which are presented thousands of treated cases. The claims are most enthusiastic, frequently without support of statistics. Where the latter are presented, they seem to be, as statistics everywhere, at least often questionable, as regards both the percentage of cases found suitable for treatment and, more important, the percentage of cures.

Contraindications to treatment have been generally agreed to include hernias associated with undescended testicles, irreducible hernias, those which cannot be continuously and perfectly retained by a truss, and sliding hernias. To these should be added other diseases local to the inguinal region, such as lymphadenopathy, and such general constitutional conditions as blood dyscrasias, carcinomatosis, active venereal diseases, obesity and a low intelligence quotient, or psychiatric maladjustment preventing thorough cooperation. The patient must wear a truss kept in an exact position continuously for twenty-four hours a day for a period of months. He requires as a rule from four to fifteen or more injections and even more clinic visits. If the truss fits properly, the patient is thereby immediately made comfortable, often sufficiently so, in his mind, to render return for injection unnecessary. Finally, I consider as unsuitable for injection, as indicated later, hernias presenting atrophic atonic tissues, and hernias as those in the direct inguinal type in which cure depends on "filling in" a sizable defect. Altogether the foregoing factors are responsible for a high percentage of unsuitable cases, and the percentage of hernias so often reported suitable for injection treatment seems abnormally high.

As to the percentage of cures, follow-up work on ambulant cases of hernia requiring from months to years is difficult and expensive. Special effort and special personnel are required and under the very best circumstances does not reach 100 per cent efficiency. Figures that are offered should be based only on cured cases actually observed for a sufficiently long period. Reports in the literature of up to 100 per cent cure, as will be referred to, do not indicate satisfactory follow-up work. The latter may be rendered difficult by the varied type of patient. The clinic patient may be a confirmed transient, psychopathic, uncooperative alcoholic, or one who for an unknown reason discontinues visits. He may feel sufficiently comfortable after the application of a well fitting truss and a few injections to discontinue his subjection to even the slight unpleasantness of the injection and the wearing of the truss at night. He may become ill from other causes during the long treatment. He may even get a job in the meantime; or the private patient may lose his position or change his physician. Finally, the patient with the recurrence is the most difficult to follow; he often goes elsewhere or loses interest. These are the difficulties with which I have had to contend in my own clinic, and I do not doubt their general applicability. All in all, at the end of a year there is left for analysis a disappointing percentage of the original number treated. This percentage is found still smaller when an attempt is made to trace the cases after two years.

My own clinical experience with the injection treatment extends over a period of two years in connection with a large active hernia clinic and my private practice. Of several hundred hernia cases seen, the number selected as suitable, in which cooperation was actually obtained for treatment and follow up, is as yet too small to submit for statistical analysis. In many cases insufficient time has elapsed for a final estimate. Many clinical cures, by any test, have been obtained; the failures were chiefly in the direct inguinal type.

Heaton claimed 100 per cent cures. Warren never saw a recurrence after he pronounced a case cured! In Switzerland, Steffen [19] reported a 66 per cent cure in 1,372 hernias; Wollerman,[20] a 92 per cent cure in 544 cases. Wyss [21] reviewed 4,632 cases of injection for hernia, of which 3,048 were available for statistical analysis, including 2,775 inguinal and 309 crural, umbilical and ventral. He concluded that cure was obtained in 91 per cent of the cases. Wyss reported complications in 4 per cent, including abscesses, and in two cases of orchitis with atrophy of the testicle.

15. Heaton, George: The Cure of Rupture, Boston, H. O. Houghton & Co., 1877.

16. Hayward, George: Report of Committee of the American Medical Association on the Permanent Cure of Reducible Hernia, Tr. A. M. A. **5**: 237, 259, 1852. Manley.[7] LaRochelle.[8]

17. Schwalbe, C.: Die Radikalheilung der Hernien, Deutsche med. Wchnschr. **2**: 453 (Sept. 23) 1876; Beiträge zur radicalen Heilung der Hernien, ibid. **3**: 541 (Nov. 10) 1877; Die Radikalheilung der Hernien, Allg. med. Centr.-Ztg. **48**: 775, 789 (July 30) 1879.

18. Mallannah, S.: On a Nonoperative Treatment for Hernia, Indian M. Gaz. **59**: 308 (June) 1934.

19. Steffen, E.: Erfahrungen über die Behandlung der reponibeln Hernien nach Schwalbe (Alkoholinjektionen), Cor.-Bl. f. Schweiz. Aerzte **21**: 361 (June 15) 1891.

20. Wollerman, T.: Die Ergebnisse der Timmermannschen Injektionsmethode zur Behandlung von Hernien u. s. w. in den Jahren 1891/1904, Arztl. Rundschau **24**: 221 (May 9) 1908.

21. Wyss, Franz: Die Behandlung der Hernien mit Alkoholinjektionen, Schweiz. med. Wchnschr. **59**: 85 (Jan. 26), 265 (March 2) 1929.

Absolute alcohol was the irritant employed, and he stated that vital danger was never present.

Mayer [6] reports that he has observed since 1899 more than 2,100 hernias with 98 per cent cures. Even the 2 per cent of his failures he cures by further injections. He has seen no recurrence of his treated cases for a period of years.

McDonald [22] baldly claims that all reducible hernias in "normally built cases" can be permanently cured and that all ages are amenable.

Pine Mestre [5] recently reported 15,000 cases in which injections were variously made over a period of twenty years with a 98 per cent cure. He states that he closes the inguinal canal in from ten to fifteen days in almost any reducible hernia. There is no mention of follow-up difficulties.

Hall [23] reported one failure, explained as due to lack of cooperation, in thirty-three hernias injected.

Jameson and Cantala,[24] although favorably impressed by Mayer's work, used the Pine Mestre technic and solution in sixty-four cases with daily injections for from twelve to fifteen treatments. Of four recurrences, two were later "relieved" by additional injections.

Gray [25] of England followed Mayer's technic and claimed a 75 per cent cure. He gives no statistical analysis.

Bratrud [26] of the University of Minnesota reported the treatment of 406 hernias in 387 patients. "A very small number of these have been only fitted with trusses because of their advanced age or feebleness. The recurrences are a little less than 4 per cent including indirect and direct inguinal, femoral and epigastric hernias." In only three cases in which there was extreme difficulty in holding the hernia reduced has he been unable to effect a complete closure.

Rice [27] has treated more than 600 cases at the Minneapolis General Hospital without complications. He mentions difficulties in follow up but knows of only two failures.

Larson [28] of the University of Minnesota concludes that injections are suitable for "umbilical, inguinal, femoral, and certain types of postoperative incisional herniae, making up in all at least 90 per cent of these cases which are seen. For the remaining 10 per cent of herniae, injections may be used to supplement surgical repair." He used the phenol, alcohol and thuja solution, averaging eight injections, and reported a 93.5 per cent cure in a total of 137 hernias, including direct and indirect hernias of all sizes occurring in all age groups. Practically the only complication, occurring in 10 per cent of the cases, was effusion into the hernial sac. The swelling subsides in three weeks but frequently necessitates aspiration. He concludes that no harm results from the injections should the method fail to cure.

Quillan [29] reports favorably on the treatment and cured five recurrent, two umbilical and twenty-three indirect inguinal hernias. His only complication was an edema of the scrotum.

Fowler [30] thinks that the claim of 98 per cent cure is reasonable. He has treated 700 cases in five years. He "naturally" assumes that, if patients do not return, their hernias are "gone and forgotten." He treats all types of hernias, using a solution of plant extracts containing tannic and gallic acid irritants of meager description but having its own trade name advertised to the profession. He describes eight cases treated; one patient (case 6) was "diabetic at the outset, but during treatment, weekly tests showed sugar in the urine diminished and disappearing, probably because of a general return of health with the removal of hernial drag." [30]

REPORTS OF EXPERIMENTS

Experimental work on this subject that has been reported is inconclusive. The research has successfully demonstrated that the injection of irritating fluids produces scar tissue, but no work has been done to prove that such scar tissue per se cures a hernia. Indeed, the surgeon who takes great care to close an incision by meticulous apposition of the tissue in order to have the least possible production of scar tissue believes that large scarred areas are particularly prone to postoperative incisional hernia.

Hall [23] reported experiments on animals in which he injected into the abdominal wall a solution of alcoholic tinctures of many plants having a tannic acid composition (Pine Mestre). On histologic examinations he obtained a proliferation of connective tissue cells with large mononuclear phagocytes and foreign body giant cells as in a foreign body granuloma. He found "regeneration of striated muscle." Hall concluded from his experiments that there is a "formation of adhesions and a connective tissue barrier, thus effectively blocking and obliterating the canal." Wolfe,[31] using the same solution, produced an experimental plastic peritonitis in animals. He states that injection into and around the spermatic cord left the lumen patent, the epithelial lining intact, and perfect preservation of the vas deferens. Bratrud [26] used various solutions in dogs and rabbits and recommended one consisting of the distillate of the tinctures of several herbs, to which is added 0.1 per cent tannic acid and 0.5 per cent thymol. He reports that microscopic sections show a marked proliferation of fibroblasts, with no infiltration of polymorphonuclear cells, giant cells or necrosis. McKinney [32] used experimentally a solution consisting of 50 per cent phenol, 25 per cent alcohol and 25 per cent oil of thuja, and produced young fibrous connective tissue without necrosis, hemorrhage or leukocytic exudation. The fibroblasts penetrated adjoining muscles and appeared firmly attached to them. Rice,[27] also using the latter solution, reports that histologic examination of tissues obtained from patients at operation at various intervals after experimental injections indicated an early reaction consisting of exudation with polymorphonuclear and round cells, with evidence of cellular necrosis. Later, fibroblasts appeared and the polymorphonuclear cells disappeared. Dense adult fibrous tissue was present by the forty-second day.

22. McDonald, G. A.: M. Council of Philadelphia **10**, 1905; Illinois M. J. **48**: 399 (Nov.) 1925; Injection Treatment of Hernia, Clin. Med. & Surg. **36**: 802 (Nov.) 1931; Treatment of Herniae by Injection or Ambulant Methods, Fairfield, Ill., G. A. McDonald, 1932.

23. Hall, J. S.: The Eradication of Hernia by Injections, M. J. & Rec. **130**: 61 (July 17) 1929.

24. Jameson, F. S.: Treatment of Hernia by Injection, Clin. Med. & Surg. **38**: 172 (March) 1931; Jameson, F. S., and Cantala, J.: The Relief of Inguinal Hernia Without Operation. M. J. & Rec. **131**: 187 (Jan. 15) 1930.

25. Gray, St. G. B. D.: Injection Treatment of Inguinal Hernia, Brit. M. J. **2**: 12 (July 2) 1932; Proc. Roy. Coll. Med. **27**: 1289 (April 4) 1934.

26. Bratrud, A. F.: The Ambulatory Treatment of Hernia, Minnesota Med. **16**: 446 (June) 1933; Journal-Lancet **53**: 673 (Dec. 15) 1933, **54**: 337 (June 15) 1934; Minnesota Med. **18**: 441 (July) 1935; J. Iowa M. Soc. **25**: 591 (Nov.) 1935; Indust. Med. **4**: 469 (Sept.) 1935.

27. Rice, C. O.: The Injection Treatment of Hernia, Minnesota Med. **17**: 248 (May) 1934; The Rationale of the Injection Treatment of Hernia, ibid. **18**: 623 (Sept.) 1935.

28. Larson, L. M.: The Injection or Nonoperative Treatment of Hernia, Minnesota Med. **17**: 703 (Dec.) 1934.

29. Quillan, L. J.: The Injection Treatment of Reducible Hernia, Internat. J. Med. & Surg. **47**: 374 (Oct.) 1934.

30. Fowler, S. W.: Experience with the Injection Treatment of Hernias, M. Rec. **141**: 207 (Feb. 20) 1935.

31. Wolfe, R.: The Injection Treatment of Inguinal Hernia, M. J. & Rec. **133**: 243 (March 4) 1931.

32. McKinney, F. S.: Injection Method in Treatment of Hernia, Minnesota Med. **16**: 447 (June) 1933.

Rice points out that the inflammation produced is exudative and proliferative. He believes that the ideal solution should "stimulate the production of fibroblasts whereby the defect can be filled with scar tissue." Rice has more recently favored for clinical use sodium psylliate, a soap of psyllium seed oil. Stoner,[33] in a very recent article, agrees with the foregoing and states that "the primary object of this treatment is to set up an active seroplastic exudation causing but little inflammation, with the formation of firm fibrous connective tissue proliferation filling and obliterating the hernial tract." In his enthusiasm he recklessly claims that "fibrous tissue formation following hernioplasty undoubtedly plays a much more important part in the cure than removal of the sac, replacement of the cord and the suturing process."

I have repeated these experiments on dogs and rabbits. Muscle and fascia were injected with various solutions of increasing strengths including alcohol, tannic acid and phenol. I also performed biopsies during open operations on patients who had sclerosing injections. On the whole, Rice's observations were confirmed. Irritating alcohol and tannic acid solutions produced an exudate consisting of edema, fibrin deposit and the infiltration of polymorphonuclear cells, round cells, hyperemia and thrombosis. Phenol solutions produced in addition areas of necrosis. Later biopsies showed lymphocytes and fibroblastic proliferation in progressively greater abundance. In other words, injected chemical irritants produced an acute inflammatory reaction which was gradually replaced by chronic inflammatory changes, resulting in the production of new fibrous connective tissue. Generally it appears that the more dilute the irritant the less the exudate, and there is instead a fibroplastic response, or fibroplasia, wherein fibroblasts grow with the production of collagen fibrils. As these mature, connective tissue or scar tissue is formed, the end result of inflammation. Systemic damage is not produced; very frequently no evidence of inflammation can be found after late examination of injected tissues, and finally, clinically, an area of induration even of long standing may undergo resolution.

EFFECTS OF FORMATION OF SCAR TISSUE

In short, the experimental work that has been done proves essentially that injection of chemicals is able ultimately to produce scar tissue. How does the newformed scar tissue cure a hernia? All incisions into muscle and fascia, even those with the most accurate apposition, heal with the production of fibroplastic tissue. "The fibroblasts grow from one surface to intermingle with those from the opposite side, producing collagen fibrils which effect a permanent union. . . . Scar tissue is never as resistant to tension as normal tissue and if present *in any amount* [34] it may prove to be a vulnerable point in any area subjected to pressure or tension. It is desirable, therefore, to have the least possible amount of scar tissue following abdominal incisions, for example, in order to avoid postoperative herniation through the cicatrix." [35]

There is, therefore, an important distinction to be made in the value of scar tissue—a distinction dependent on the width of the fibrous tissue. This may be illustrated in cases of healing by first intention as contrasted to healing by second intention. In the one, the defect is narrow and fibroblasts therein are firmly embedded in the normal tissues of the wound borders. These cells unite to form a thin scar, which, as the connective tissue cells mature, contracts still more and thus brings the borders even closer. The muscle or aponeurosis so united may have restored to it its physiologic functions, including the function of support. In the second instance there is a tissue defect with more widely separated borders requiring a greater proliferation of scar tissue simply to fill in the defect. The latter is more likely to allow postoperative hernia even with the anatomic filling in of fibrous tissue, which may be especially abundant as following infection and suppuration. The latter complication in a surgically repaired postoperative hernia would be likely to lead to a recurrence.

From this argument it would theoretically appear that hernias having anatomic defects with widely separated aponeuroses, as in postoperative hernia, in diastasis recti, or in most direct inguinal hernias, cannot be cured effectively by filling in these defects with fibrous tissue, as may be produced with injections of irritating fluids. In actual practice such hernias are not permanently cured, and the injection treatment cannot be recommended for these types. The fibrous tissue filling such a defect may serve "to obliterate" and block a hernia better than no tissue at all, but the fact remains that such tissue in large amounts under pressure is likely to stretch and yield relatively easily. Further, such new tissue can add little to support preexisting muscle or fascia already atrophic, stretched or otherwise atonic. Granting, therefore, the effectiveness of the injected solutions in producing new connective tissue, which is all that the experimental work has proved, it is difficult on theoretical grounds at least to conceive of the cure of an incisional hernia of moderate or large size by this means. A direct inguinal hernia is caused by anatomic failure of support to the abdominal contents at the site of Hesselbach's triangle. The defect is not an absence of fibrous connective tissue, for that is always present, and, in fact, the larger and older the hernia, the denser the fibrous tissue.

THE SCLEROSING TECHNIC

On the other hand, it is theoretically possible to explain the cure of oblique inguinal and umbilical hernias by the sclerosing technic. Normally the site of the umbilical cord becomes closed concomitantly with the obliteration of the umbilical cord. An umbilical hernia is a defect in the aponeurosis through which a protrusion occurs. If, in infancy, this protrusion is overcome by some method calculated to keep the contents of the sac within the abdomen, e. g., adhesive tape over invaginated skin, the fascia of the aponeurosis will close at a rapid rate. The addition of a chemical irritant will aid fibroblastic growth and closure.

Similarly, in indirect or oblique congenital inguinal hernia there is a defective closure of varying types of the processus vaginalis. The latter may close spontaneously and disappear even after birth. "Keith states that 4.4 per cent of male infants have a hernia in the first year of life, and Bull found that fully two thirds of these disappear either spontaneously or with the aid of a truss." [36] A truss worn for a long period may accomplish such a cure in infancy and even later. Sir Astley Cooper, anatomist and surgeon, requested that at his autopsy his cured oblique inguinal hernia be investigated. He had worn a truss from the ages of

33. Stoner, A. P.: Rôle of Fibrous Tissue in Hernia Repair, Am. J. Surg. 32:168 (July) 1936.
34. Italics not in original.
35. Rawdin, T. S.: The Repair of Tissue, in Christopher, Frederick: A Textbook of Surgery, Philadelphia, W. B. Saunders Company, 1936.
36. Erdman, S.: Hernia, in Christopher: A Textbook of Surgery.

19 to 25. The autopsy report[37] read: "Upon very careful examination, a minute serous canal, not more than a line in breadth when opened, was traced extending from the internal ring along the spermatic cord into the tunica vaginalis, being the remains of a congenital inguinal hernia."

It is important to remember that the fascia and muscles of the inguinal region in an oblique hernia may be normal and well developed, and there need be no fascial or muscular defect in the early reducible case. Practically, in oblique or indirect inguinal hernia the most essential part of the open operation is closure of the neck of the sac, and simple ligation and removal of the sac give a satisfactorily high percentage of cure.[38]

In a reducible oblique hernia the contents of the sac are reduced into the abdomen; the sac itself is almost never reduced. With a patient in the prone position, or with a truss pad compressing the inguinal canal of a reduced hernia, there is practically no defect, and the walls of the sac are in contact with each other. As the hernia descends, the walls of the canal are pushed apart, forming a functional defect. Therefore, if one can accomplish in these cases the closure of the peritoneal portion of the vaginal process, i. e., obliteration of the hernia sac, cure should result without further ado. With the sac completely emptied, the walls lie in close contact with each other, and they should adhere to each other and thus obliterate the empty sac as such if an irritant is introduced to provide an inflammation or fibroplastic proliferation. This is what is done when a catgut ligature is introduced about the neck of the sac.

The irritant provided may be chemical. The injected solution may be deposited either within the sac or about the sac, usually the latter. In either event an aseptic local peritonitis involving the sac wall is produced. The walls of the emptied sac are kept in constant contact by strong pressure of a truss, which also provides constant pressure on the walls of the inguinal canal. If, throughout the inguinal canal, with the maintenance of such compression, an irritant chemical is introduced, the fibroblastic process described may produce, in addition to the obliteration of the sac, which may suffice for a cure, the binding together of the walls of the canal and also the contents of the canal, into one more or less solid whole. The contents of the canal are chiefly the spermatic cord and its coverings, external and internal spermatic fascia, which are mainly connective tissue. The usual precaution of preliminary aspiration assures avoidance of a blood vessel. Insertion of the needle point or fluid into the vas is productive of exquisite pain and is thus warned against. Scar tissue formation about the vas apparently does not affect the lumen, as any surgeon who has dug a vas out of dense scar tissue of a recurrent hernia may testify. The inner lining of the vas remains, as a rule, uninjured, so that the lumen is preserved.

CONCLUSION

The hernia cases for injection treatment must be suitably selected. The most promising results are obtained in patients with oblique hernias which are easily completely reducible and which can be readily kept reduced by a truss. Small recurrent and small direct hernias may be successfully treated. The surrounding tissues must not be atrophic or atonic. It should be pointed out that proper fitting of the truss is of greatest importance. It must feel comfortable and firmly retain the hernia under all conditions. It is obvious that the pad must fit over the internal ring in oblique hernias, not press on the pubis, and otherwise fit properly.

The technic of injection, adequately described elsewhere,[28] involves an accurate knowledge of the anatomy involved. I experimented with injections of methylene blue in cases prepared for operation and in the first few attempts was astonished at the failure of the injected solutions to be at the expected sites. With experience, the injection at the internal ring may be made quite exact, and such experience should first be gained. The solution used should be one that does not require large doses, preferably not over 0.5 cc., for it is too easy to inject into the peritoneal cavity. Knowing of no better solution at present, I use one of phenol 40 parts, alcohol (95 per cent) 35 parts, oil of thuja 25 parts. The only complication I have encountered has been mild swelling of the scrotal contents, which subsided spontaneously in a few days.

A large number of patients who reject surgery, and who would otherwise go untreated except perhaps for a truss, will submit to the injection treatment. In proper hands, in carefully selected cases, the method is valuable; abuse is extremely easy and can cause general condemnation.

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37. Murray, R. W.: Hernia, London, J. & A. Churchill, 1910.
38. Lorthioir, P.: Inguinal Hernia in Children, J. de chir. et ann. Soc. belge de chir. **33-31**:544 (Dec.) 1934.

GIANTISM

REPORT OF A CASE

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Of 124 letters and cards requesting reprints of and/or making comments about a recent paper[1] on giantism, seventy-one informed me of a remarkable schoolboy giant at Alton, Ill. This giant has received much newspaper and magazine publicity; my clippings about and photographs of him, over a period of eight years, fill two large scrapbooks. But the popular accounts of his height vary so much in stating his dimensions that their accuracy was questionable. I recorded the following history and measurements at his home, June 2, 1936:

R. W., a white youth, single, aged 18 years 3½ months, is just completing the first semester of his freshman year in college. He is a preacromegalic giant, 8 feet 3¼ inches (252 cm.) tall, of phenomenal size, molded on a vast scale, colossal and stupendous in bulk, truly Gargantuan in all his proportions, and symmetrically built. His family home is a small and modest house with ceilings 8½ feet high; he stoops through its doorways and picks his way about among the light fixtures. His oversized armchair and bed have been especially made, but they seem too small for him. He has been bothered much by the curious, who want to see such a freak. His parents have come to resent these intrusions of the inquisitive; they would like to have the lad regarded as an ordinary 18-year-old boy, and physicians and laymen alike find it impossible to do this. Both the giant and his mother are unduly resentful of the fate which has fashioned him on so preposterous a scale. He makes his pocket money by posing for photographs, for which his charges are variable and modest, but certain.

He objects to being measured or to talking about himself and says there is "nothing in it" for him; a lavish and continued expenditure of much cajolery, flattery, servility, wheed-

I am indebted to Drs. David P. Barr and Louis H. Behrens of St. Louis and to Dr. J. E. Walton of Alton for their discussions and suggestions and for their kindness in furnishing me with their data on the Alton giant, whose height exceeds that of every other documented case of giantism on record in medical literature.

1. Humberd, C. D.: A Twenty-Five-Year-Old Error in Measuring a Giant, J. A. M. A. **106**:1713 (May 16) 1936.

ling and exaggerated politeness, and persistence is necessary to secure any information about him. His expression is surly and indifferent, and he is definitely inattentive, apathetic and disinterested, unfriendly and antagonistic. His frequently voiced plaints are "It's not my fault that I am this way," and "I didn't have anything to do with my getting to be like this." His soured attitude has embittered him very much, and he is introverted and morose, though the newspaper stories, usually quoting his school teachers, say that he is very alert and intelligent. His defective attention and slow responses hold for all sensory stimuli, both familiar and unexpected, but he does manifest a vapid interest in seeing any memoranda made by a questioner. All functions that we attribute to the highest centers in the frontal lobes are languid and blurred. He says that he never has any feelings of vertigo or faintness.

His appetite is enormous, and he eats immoderately, his daily food consumption averaging some 6,000 calories and often running to 8,000. He tires very easily and sleeps much.

He was born in Alton of native American stock. His maternal grandmother was obese and had nephritis. None of his known forebears were of unusual height, and all his immediate relatives are of very ordinary stature. He is the oldest of a family of five children; he has two brothers, aged 14 and 3½ years, and two sisters, aged 16 and 12 years. He was described by Drs. Louis H. Behrens and David P. Barr [2] of St. Louis as of July 1931, when he was 13½ years old, as 221.5 cm. tall and endowed with a superabundance of brute strength, and there is little that can be added to their account of his early history. At birth he weighed 8½ pounds (3,856 Gm.), and his birth was the ordinary uncomplicated delivery of a primipara. At 6 months he weighed 30 pounds (13.6 Kg.), and at 18 months his weight was 67 pounds (30.4 Kg.). At 5 years he was 5 feet 4 inches (163 cm.) tall, and at 8½ years his height equaled his father's. He had a bilateral inguinal herniotomy when he was 2 years old. He had measles and chickenpox in early childhood and whooping cough when he was 11. He has not had scarlet fever and and has never experienced any "growing-pains." The history of injuries includes only minor wounds to his feet.

He has been a patient in Barnes Hospital, St. Louis, on four occasions, and his routine records there have been used to supplement my own observations, particularly when his lack of cooperation made laboratory work impossible and some details of his measurements inaccessible:

Oct. 13-23, 1931: Cellulitis of the left foot with incision and drainage by through-and-through drains in the web of the first and second toes: simple anemia.

June 21-July 2, 1932: Old fracture of the second left metatarsal.

Oct. 18-23, 1932: Abscess of the left great toe, with incision, drainage and wet dressings.

March 29-May 4, 1935: Ulcer of the right great toe; epistaxis; sacro-iliac arthritis; cachexia from persistent anorexia and vomiting.

The record of his growth given in table 1 is believed to be reasonably accurate. It has been compiled from several independent sources: the hospital notes (a measurement of his height being necessary for each metabolism determination), the record of measurements kept by his father, the published accounts of newspaper correspondents (with an average deduction of 1¼ inches [32 mm.] for the heels of his shoes, since he was never asked to remove his shoes when he was backed up against sundry walls to have rulers leveled off above his crown), a tailor's specifications and a shoe manufacturer's publicity material, and a long series of photographs the backgrounds of which could be measured and scaled.

It will be noted that this growth curve has been steady and continuous, without noticeable spurts or upsets. One cannot predict when the curve will level off; I think that the lad's height is still actively increasing.

The giant appears to be quite asthenic and more than a little anemic. His musculature is inadequately developed. His general posture is good for his size and weight. His sitting posture is "droopy." His sense of position, for his arms, hands, legs and feet, is very poor. His motor coordination is not good, or else he is unduly sloppy by nature. He is careless in his dress. His handwriting is untidy and poorly legible.

2. Behrens, L. H., and Barr, D. P.: Hyperpituitarism Beginning in Infancy: The Alton Giant, Endocrinology 16:120 (March-April) 1932.

His blond hair is fine and very thick; his skin is fair, cold, moist, elastic and stretched, and very pallid. His eyebrows are thin, and they are not rugged as in acromegaly. He is severely myopic and has a moderate degree of astigmatism, and a divergent squint, which is alternative. He suffered much from headaches before these refractive errors were corrected with glasses. There is no nystagmus. The pupils are round, equal and contract normally to light and slowly to accommodation. The sclerae are clear. There seems to be a slight photophobia, a little drooping of the lids and some lid lag; there is very little contraction of the visual fields. The nose is roughly shaped and rather bulbous, and the nostrils are very large. The nasal septum shows a marked deviation to the right, but the airways are clear. He thinks his sense of smell is normal. His ears share in his gigantic makeup; the pinnae are heavy and flaring. The external auditory canals project themselves upward to an unusual angle into the skull, rather than in the usual course slightly downward and forward. His lips are thick and heavy, and pale. His teeth are very large, regular and evenly spaced and in good condition; the occlusion is good. The palate is unusually high. The tongue is big but not disproportionally so. The tonsils are enlarged and a little injected, without purulent masses. Deglutition seems to be very "violent" and "awkward." His voice is a weak bass, thick, husky and mumbling and comparable to the enunciation of a patient with an acute quinsy. His spine shows only the normal anteroposterior curves, with no lateral deviations. His chest is barrel shaped. The scapular borders are straight, and the curves of the clavicles are straightened out a little from the normal. His heart shares

TABLE 1.—*A Record by Years of Giant's Height*

Birthday Years	Height, cm.
9	185
10	189
11	201
12	209
13	218
14	225
15	232
16	239
17	245
18	251

in his proportions; the apex beat is somewhat diffuse under the left nipple. There is a reduplication of the pulmonic second sound.

His blood pressure has been about 110 systolic and 80 diastolic for five years. The respiratory rate is 18 and the pulse 70. The abdomen is slightly paunchy, rounded and soft, and its wall is rather fat and "loose." It moves freely, and immensely, with respiration. The scars of the early bilateral inguinal herniotomy are in good condition. There is a nocturia of two or three times. The external genitalia are quite small; both testes are descended. The pubic hair is scanty, and there is no body hair. He has no lymphadenitis. His hands, whose measurements will be given later, are startlingly enormous; the metacarpals are so extremely long that the thumb, to appearances, sits noticeably nearer the wrist than it should. At the knuckles the fingers tend to an ulnar deviation laterally, away from the thumb's side of the hand, to a marked degree. His nails are thin. Roentgenograms of the hands show, despite much tapering of the fingers, an abnormal amount of tufting of the terminal phalanges of all his digits. His fingers are "double jointed," and they curl themselves up in bizarre positions and assume ungainly and gruesome postures. His wrists, knuckles, knees and ankles, without being greatly misshapen, still show that they do not function with complete normality as joints; they are enlarged and awkwardly formed. But in the hasty and riotous overgrowth at the epiphyses it is not strange that nature's architecture goes somewhat awry and that the nearby joint surfaces acquire planes with angulations, in relation to the bony shafts, that deviate a little from the normal. This would explain the vagaries of unexpected and odd "twists" in his wrists, fingers, knees and ankles. These joints appear to be swollen, but they do not pit with pressure. There are pigmented scars on his shins. His feet are disproportionally large and he is very flat footed; his toes are misshapen.

His walk is a slow, laborious, shoulder-hunching shuffle. Like most other giants, he is especially prone to trophic ulcers and indolent infections of the feet, which have caused him much grief. All sensations (touch, pain, temperature) are void and blank below the ankles, and the loss of pain and temperature senses affects also the middle third of the lower legs. There is a loss of temperature sense, too, up to the level of his knees. His own explanation is that his "legs have grown too fast for the nerves to keep up." It is possible to conceive of his diminished sensibility arising from a "standard" number of ordinary pain areas being distributed over a skin with the surface area more than twice the normal in size. He is unaware of a wrinkle in his sock or a foreign body inside his shoe until a blister, followed by an ulcer, is formed, and only then do the general symptoms of a systemic reaction arouse him.

Roentgenograms of the skull show the air spaces of the paranasal sinuses and mastoid cells developed to an unusual size. The sella turcica is very large, and its floor is pierced by a tubular structure (persistent Rathke's pouch) which extends downward and forward through the sphenoid to the posterior wall of the nasopharynx, where an indefinite soft tissue shadow bulges into the lumen. He must have a most extraordinary amount of functioning pituitary tissue. The mental reactions suggest involvement of the frontal lobes, and pressure on the pons posteriorly could well account for his loss of sensory perceptions.

TABLE 2.—*Anthropometric Picture of Giant*

	Cm.
Stature (total height, or crown-heel length)	252
Acromial height	217
Height at sternal notch	215
Height at xiphoid	182
Height at iliac crests	157
Height at symphysis	135
Height at patella	76
Occipitofrontal circumference	76
Length of nose	8
Breadth of nose	5
Neck	39
Length of clavicle	20
Biacromial width of shoulders	51
Height of scapula	21
Breadth of scapula	18
Upper arm length	45
Biceps	30
Elbow	36
Forearm length	39
Wrist	26
Hand length	20
Hand breadth	14
Circumference of chest	112
Circumference of waist	110
Bi-iliac width	39
Thigh	60
Length from trochanter to knee	74
Calf	41
Ankle	27
Foot length	41
Foot breadth	16

The hospital records, 1931-1935, of his blood studies show an average of about 4 million red blood cells, 7,000 white blood cells and 75 per cent hemoglobin; the Kahn and Wassermann tests were negative. Urinalyses have all been negative except for a rather high specific gravity and the presence of acetone during a starvation period in April 1935 (Simmonds' disease?). The blood sugar was 134 mg. June 30, 1932, 89 mg. March 25, 1935, and 112 mg. April 8, 1935. The basal metabolic rate was minus 18 per cent in 1932 and in 1935.

His anthropometric picture is given in table 2. His present weight, he says, is 395 pounds (179 Kg.) in ordinary clothes.

The thick lips, coarse nose, increasing depth of the chin and general enlargement of the soft parts of the face, as noted when earlier photographs are compared, suggest that an acromegalizing process is already beginning and can be expected to become prominent in the near future.

Anthropologists have yet to set up a definite height above which a man can with certainty be labeled a giant. A scant 10 inches (25 cm.) added to the crown-heel length of an ordinary 6 footer sets him far apart from the crowd and gets him the attention always bestowed on giants by the public. A 10 gallon hat and a pair of high heeled boots equipped with "lifts," with some 82 or 83 inches (208 or 211 cm.) of height furnishes the picture of more than half of the giants seen in today's sideshows. It is of interest to read that Phineas T. Barnum, doyen of American showmen, after expressing a doubt that there were any men of 8 foot (244 cm.) stature, carefully instructed a friend who was acting as his agent in hiring a French giant [3] to give the tall man a job only if his height, as measured when the bootless giant lay flat on the floor, exceeded 7 feet 2 inches (218 cm). Just why the impresario chose that figure is not known; probably a giant of this height had been in his employ previously. This boy at Alton could indulge himself in the luxury of a 13 inch slouch and still get on the payroll of a latter-day Barnum.

The height limit of the U. S. Army in World War days was 6 feet 6 inches (198 cm.). Among 3¾ million men between the ages of 18 and 30 (a relatively larger proportion of them between 21 and 30) only seven cases of giantism [4] were found. I have been unable to identify these seven cases, for only a little information about them is to be had from the tedious tables of the work cited. But four of these giants were accepted for full army service, in spite of their disability, so it must be presumed that their heights were not greatly in excess of the army's standard. One of the four was a Negro from the Mississippi River bottoms of rural Arkansas [5] and the other three were white. One of the three came from a rural section in the northern half of Minnesota,[6] where the population was 10 per cent Scandinavian, another came from a rural section in the southern half of Minnesota,[7] where the population was more than 20 per cent German and Austrian, and the last, a native white Southerner, came from eastern Oklahoma [8] where, in a rural district, there was a sparsely settled Indian territory. Perhaps these men became drum majors for army bands. Their roster does not seem to include Homer Parks of Memphis, Tenn., who is still regularly exhibiting as a circus giant under a banner which extols him as being the tallest soldier overseas. He makes an imposing spectacle in American Legion parades.

Of the three men whose giantism was sufficient reason to reject them from army service, one was a white mountaineer in a rural district of eastern Kentucky,[9] a second came from an urban district in section 2 of Louisiana,[10] and the third came from Washington [11]; the exact locale is in doubt, since the earlier references assign him to an urban district, while the later ones place him in a rural section. Tracing these giants must be left to some one who knows the ins and outs of War Department officialdom and the whereabouts of record cards there. I have been told that the statistical cards used in compiling the data were destroyed. The material of the text cited must be incomplete, for I have competent evidence that Bernard Coyne (1897-1921), an undescribed 7 feet 8 inches (234 cm.) giant of the infantilism type who lived on a farm near Oto, Iowa, appeared before the examining board at Des Moines in the draft routine of 1918 and was rejected because of his giantism.

3. The Life of Barnum, Written by Himself, Philadelphia, International Publishing Company, 1891, p. 250.
4. Love, A. G., and Davenport, C. B.: Defects Found in Drafted Men: Statistical Information Compiled from the Draft Records Showing the Physical Condition of the Men Registered and Examined in Pursuance of the Requirements of the Selective-Service Act, Washington, D. C., Government Printing Office, 1920, pp. 81 and 439.
5. Love and Davenport,[4] pp. 444, 1102, 1325 and 1468.
6. Love and Davenport,[4] pp. 448, 1102, 1330 and 1475.
7. Love and Davenport,[4] pp. 448, 1102, 1330 and 1477.
8. Love and Davenport,[4] pp. 451, 1107, 1333, 1472 and 1547.
9. Love and Davenport,[4] pp. 612, 1160, 1328, 1472 and 1552.
10. Love and Davenport,[4] pp. 612, 1035, 1247 and 1328.
11. Love and Davenport,[4] pp. 624, 1043, 1165 and 1251.

THE USE OF IODINE IN TOXIC GOITERS

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The feeling that there is a definite trend toward the use of iodine in the treatment of toxic thyroid disease prompts the present discussion. It is to be presumed that there has been no appreciable decrease in the number of cases of diffuse toxic goiter and of nodular toxic goiter during the past six or seven years, yet the number of patients who have been submitting to thyroidectomy has markedly decreased. Furthermore, many who finally come to surgery have suffered from their disease for a longer period than was the case a few years ago. Many of these individuals have been given iodine in one form or another as part of their treatment. In a considerable number of instances they not only have become poor surgical risks but have an increased morbidity element which lengthens both the preoperative and the convalescent period.

It has been pointed out many times in recent surgical literature that the depression years have increased the tendency to procrastinate in elective surgical conditions. Toxic thyroid disease may be said to fall into this category, but only to a degree; for in the light of present knowledge surgery offers the best chance for cure or relative cure in this condition. If one wishes to chance the damage to the neurocirculatory and other vital systems of the body by a regimen of prolonged medical management, the disease may be thus controlled to a certain degree. The economic loss entailed by such a method far exceeds that which accompanies surgical intervention. The consequent morbidity is greater than that following surgery, and, furthermore, surgery in competent hands offers a mortality rate of less than 1 per cent. This mortality rate is made up in the main by two groups of patients: those with large intrathoracic nodular goiters and those with long neglected toxic goiters. In the latter classification falls no inconsiderable number of individuals who have become "iodine fast," who no longer respond to iodine when given as a preoperative preparation.

To sound a warning that the mortality rate of thyroidectomy will increase unless means are found for disseminating information anent the danger of procrastination and in particular the danger of improperly including administration of iodine in the medical management of these cases does not seem out of place.

Definite figures are not available, but personal interviews with many physicians who practice in a district where goiter is prevalent indicate that there is a growing tendency to disregard Plummer's dictum that iodine should be used only as a preoperative preparation. The latter is a dogmatic yet a safe rule. That there are exceptions, as will be indicated later, is recognized. That importunings of the patient should influence the judgment of his physician is inexcusable. That "another will if I do not" is even more questionable logic.

A verbatim recital of some of the interviews and views of individuals on the treatment of toxic goiter would be interesting but hardly fitting. What seems of importance, however, is that those who have graduated since the time when Plummer presented his hypothesis are more wary of giving iodine to their patients than those of the older group of physicians. This is a fine commentary on the teaching methods in medical schools today but points at the same time to the necessity for persistent postgraduate education.

The pharmacology of iodine need not be reviewed, but it may be said that many of the actions which it exhibits are unexplainable except by the generalizing term "alterative."

The empirical nature of the administration of iodine in thyroid disease is indicated in its action in both toxic and nontoxic goiters. In the former the gland is the seat of a hyperplasia; in the latter, of a colloid increase. In the former is found hyperthyroidism and in the latter often hypothyroidism, yet iodine has a beneficial effect in both conditions. In toxic states the benefit is short lived. This is not as paradoxical as it seems, for it has yet to be proved that an altered secretion is the cause in either hypothyroidism or hyperthyroidism. There is considerable evidence and good opinion that in diffuse toxic goiter the thyroid gland is not the cause per se but suffers with or from disturbances of other organs of the body.

The correlation of activity of the various endocrine glands has been proved to an extent that makes one loath to attribute the therapeutic effect solely to action on any single gland. It seems reasonable, therefore, to assume that at least some of the effects of iodine in good sized doses are exhibited because of its action elsewhere than on the thyroid gland itself. The amount usually administered in dosages of compound solution of iodine is much in excess of the needs of the gland.

A true replacement value is exhibited, however, in the colloid gland found in goitrous areas where the relation of lack of iodine in the soil and colloid goiter has been pretty well established. Here, minute doses of iodine tend to correct anatomic changes and altered function in a gland which has suffered from long continued deprivation of a necessary constituent, a deprivation which amounts to a gross deficiency.

Nodular goiter—toxic and nontoxic—is found most frequently in goitrous districts. There seems to be a distinct relationship between these types and diffuse toxic and colloid (diffuse nontoxic) goiter. It may be surmised therefore that here too, when symptoms of hyperthyroidism manifest themselves, one is seeing the effect of a functional deficiency due to a mild, long continued disturbance of the general endocrine balance, nutrition and psychic state.

For this reason we believe that iodine is properly used in small doses for hypothyroidism and colloid goiter. Empirically we believe in its use for hyperthyroidism both as a preoperative preparation and as a postoperative treatment. With a definite understanding of its limitations and dangers, it may be used as an expedient in mild hyperthyroid states and as an aid in differential diagnosis. Whenever iodine is used over a prolonged period of time, its administration should be interrupted for a week or ten days every four to six weeks.

We are thoroughly committed to the idea that all so-called adenomatous goiters are surgical conditions.

Iodine should be used in both nodular toxic and nontoxic types as a preoperative preparation and for assistance in the correction of an obvious functional imbalance. One is dealing in these instances with a gland which in itself is diseased. Surgical intervention should be undertaken in these cases with the idea that

Read before the American Association for the Study of Goitre, Chicago, June 10, 1936.
From the Departments of Surgery and Clinical Pathology, Syracuse University College of Medicine.

subsequent treatment with thyroid extract and iodine, if necessary, will be much more easily and pleasantly handled than with attempts at adjustment of the patient by other means to a poorly functioning and most certainly disordered gland containing diseased tissue.

Iodine is the efficient constituent of any of the compounds containing it. There is no particular advantage in any one of them. When it is used in the form of compound solution of iodine we have found orange juice to be the best tolerated of all vehicles. The potassium or sodium salt is equally effective and may be excellently disguised in the new raspberry syrup. These points are mentioned because of their importance to the patients and as an exhibition of elegance in therapeutics.

One of us (Groat) has for many years administered from one third to two thirds grain (0.02 to 0.04 Gm.) of iodized calcium daily whenever thyroid extract is administered. With others, he believes that the action of the extract is improved and its effect smoothed by the coincidental administration of such comparatively small doses of iodine.

We realize that this presents a rather cursory survey of the legitimate uses of iodine in diseases of the thyroid gland. It indicates, however, the need for an understanding of the action of this chemical when its use is contemplated in the treatment of toxic thyroid states.

The statement that it should then be used only in the preparation of the patient for operation, and perhaps postoperatively, is heartily echoed by those who have had to deal surgically with patients who have had temporizing treatment which included the improper administration of iodine.

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Clinical Notes, Suggestions and New Instruments

SEQUEL TO TREATMENT WITH PHOTODYN

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An unpleasant sequel to the treatment of a condition of melancholia with hematoporphyrin hydrochloride (Photodyn [1]) has recently come to our attention. This was a severe urticarial response followed by intense pigmentation of the skin resulting from exposure to sunlight two months after the use of the drug. The response appeared in a region corresponding to the probable point of injection of the drug, and its similarity to the effects which we have obtained by injection of this substance into the skin and subsequent exposure to sunlight leaves little doubt as to the cause of the response. Since this drug is being frequently used in the treatment of mental disorders of depressive type, the possible sequelae should be brought to the attention of those who may employ it. We have nothing to say as to the merits of the treatment, on which we have no basis for the formation of an opinion, but we feel that the properties of the substance should be more fully understood.

CLINICAL ACCOUNT

Mrs. R. E. S., a white American housewife, aged about 48, consulted us May 23, 1936, because of several pigmented areas on her arms. She stated that these areas appeared Feb. 21, 1936, as angry, pruritic, elevated wheals immediately following her first sunbath of the season. She stated that they began at the sites of injection of "Photodyn," of which drug she had received about eighteen injections between Nov. 15 and Dec. 15, 1935. The first day the three areas were "like hives or insect bites." The next day the wheal element had disappeared, leaving erythema in its wake. This erythema persisted for two or three days and was followed by brown pigmentation. There was no history of drug ingestion other than the Photodyn.

Inspection revealed a mottled brown pigmented area, 2 inches in diameter, over the insertion of the right deltoid. Near the same area on the left arm were two similar spots each measuring about 1 inch in diameter. None of the lesions were indurated. Pruritus was absent. When seen five months later, the pigmented areas were still present but had faded somewhat.

RESPONSE TO INTRADERMAL INJECTION OF PHOTODYN

We have made numerous injections of Photodyn into the skin of normal individuals in the course of investigations of the photosensitizing properties of the porphyrins. The procedure is to inject intradermally a small quantity of Photodyn diluted 1 to 20 [2] with salt solution or phosphate buffer. Whealing usually follows the injection, which recedes rapidly leaving a small area at the point of injection slightly colored red by the hematoporphyrin. On exposure to sunlight for several minutes an itching wheal appears over this area, which fades in an hour or so, being followed in a few days by pigmentation, which varies in intensity with the magnitude of the urticarial response evoked. The pigmentation may be very intense and persist for several months. If the injected area is protected from the light, no response is produced.

In one case the sensitivity of the injected area persisted for as long as nine weeks, but we have seen no evidence of sensitivity after this time, and ordinarily there are no further sequelae. However, in one case which had shown no unusual initial response, a long exposure to sunlight on a bright day nine weeks after the date of injection was followed by the appearance of numerous small papulovesicular eruptions at all the points of injection, these being plainly marked by the pigment that had resulted from previous exposure. One of the areas excised and sectioned showed microscopic structure similar to the lesions of hydroa vacciniforme. All the remaining lesions disappeared in the course of two weeks; some of them, however, formed crusts and left tiny scars. In the other individuals injected no such response was observed.

COMMENT

The general similarity to results obtained in experimentation leaves little doubt as to the cause of the urticarial response and pigmentation in the case reported, and there is likewise little doubt that such events may be expected if the patient is exposed to intense sunlight within a considerable period after injection of hematoporphyrin. Such a response, when not anticipated by the patient, might produce considerable alarm, as in the present instance, and it seems important to give warning of the possibility of such an event at the time of administering the drug. The appearance of a papulovesicular eruption, such as resulted in the experimental case, might be even more disturbing, and when one realizes the disfigurement caused by the lesions of hydroa vacciniforme which allegedly result from the photosensitizing action of porphyrins, the possibility of such an occurrence should be carefully guarded against.

In this case it seems probable that in the intramuscular injection of the hematoporphyrin some of the substance got into the skin itself and was held there, its presence being made known only on subsequent exposure to sunlight; it is probably impossible to prevent such extravasation into the skin when injections are made. It should be called to attention, however, that sensitization of the skin of the whole body to light may result from the injection of this drug. Meyer-Betz [3] injected 0.2 Gm. into his own vein and produced a sensitivity to light which lasted for two months. While the doses recommended for therapeutic use are much smaller than the dose employed by Meyer-Betz, one must not forget the possibility of a cumulative effect since, as shown, the hematoporphyrin may be held in the skin for a very long time.

Hematoporphyrin belongs to the group of photodynamic dyes of which bengal rose is a member. When living organisms are treated with these dyes and subsequently exposed to light,

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1. This is the name of the commercial product.

2. This solution should contain 0.1 mg. of hematoporphyrin hydrochloride per cubic centimeter.

3. Meyer-Betz, F.: Untersuchungen über die biologische (photodynamische) Wirkung des Hämatoporphyrins und anderer Derivate des Blut- und Gallenfarbstoffs, Deutsches Arch. f. klin. Med. 113: 476, 1913.

photo-oxidative changes result which are usually destructive to the organism. These oxidative changes all require molecular oxygen [4] and the effects produced in the skin can be separated from the sunburn response of normal skin on this basis.[5] The wavelengths of light which produce the hematoporphyrin response are those absorbed by this dye and lie in both the ultraviolet and the visible regions. The shorter wavelengths which produce the sunburn response do not pass through ordinary window glass to any extent, and such glass will protect against sunburn; but virtually all the wavelengths which produce the hematoporphyrin response will pass through such glass, so that it affords no protection in this case. It should be important to make this clear in warning patients against the effects of light, as a response might be elicited by sunlight passing through a window when the patient is indoors.

Whether the sensitivity to light produced by hematoporphyrin is supposed to play a part in the alleged therapeutic effect is not made altogether clear by the statements of those who recommend it. It is interesting to note from the work of Wolgemuth and Sorenyi,[6] that hematoporphyrin stimulates the use of oxygen by tissues in the absence of light; thus it has some action other than that of a photosensitizer. Bengal rose, on the other hand, does not have such a stimulating effect, although both substances cause the uptake of oxygen in the presence of light, owing to the photo-oxidations which they bring about. It may be mentioned that in our experiments we have found that bengal rose is not held in the skin for nearly so long a time as hematoporphyrin, its sensitizing action disappearing in the course of forty-eight hours. This, together with the fact that bengal rose is excreted very rapidly, accounts for the fact that sensitivity to light does not occur following the use of this dye in liver function tests, except in those cases in which the dye is retained.

CONCLUSIONS

From the foregoing account it would seem that, if hematoporphyrin is used as a therapeutic agent, the patient should be carefully warned of the events which may follow exposure to intense light. It should be emphasized that sunlight passing through window glass is quite as dangerous in this case as direct sunlight.

DERMATITIS MEDICAMENTOSA RESULTING FROM ADMINISTRATION OF SULFOCYANATES IN THE TREATMENT OF HYPERTENSION

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Sulfocyanates have enjoyed varying degrees of popularity in the treatment of essential hypertension since their introduction by Westphal [1] in 1924, following the observations of Pauli [2] in 1903. However, much of the early enthusiasm for this drug has waned as its toxic manifestations have become evident. The high incidence of alarming cerebral symptoms in cases in which patients receive either potassium sulfocyanate or sodium sulfocyanate serves as a definite caution against the indiscriminate and prolonged use of either of these drugs.[3] Although sulfocyanates have fallen into disrepute as a therapeutic agent of any permanent value in the treatment of essential hypertension, they continue to be used freely in proprietary preparations designed to lower the blood pressure.

The dermatoses that result from the use of sulfocyanates have not received the attention which they deserve. From the literature we have been able to collect only nine reports of cases in which some type of eruption occurred following the ingestion of this drug. However, since the observation of the case that is reported in this paper, our attention has been called to a number of similar unreported cases that have been observed by several of our colleagues. It is our belief that the dermatoses resulting from sulfocyanates occur much more frequently than a perusal of the literature would seem to indicate.

In 1926 Takács [4] reported a case in which papular dermatitis followed the administration of 1 Gm. of potassium sulfocyanate daily for nine days. Gager,[5] in his report on the use of sulfocyanate in the treatment of hypertension, barely mentioned two cases in which the patients had "a drug rash similar to that of iodine." Logefeil [5] cited two cases in which the patients had "a severe dry scaling dermatitis with fever and some prostration." Weis and Ruedemann [6] observed a patient who had an acute diffuse toxic erythema associated with edema of the eyelids and followed by an exfoliative dermatitis which, according to them, closely resembled the exfoliating accidents following the use of arsenicals. Their patient had received only 2.7 Gm. of potassium sulfocyanate over a period of ten days before the appearance of the erythematous dermatitis. The exfoliation was complete within a month after the administration of the drug was discontinued. Ayman [7] has recorded a case in which an exfoliative dermatitis developed after the patient had received 4.8 Gm. of potassium sulfocyanate in eight days. Goldring and Chasis,[3] and Borg [3] briefly mentioned two other cases in which a dermatitis developed while the patients, who had essential hypertension, were receiving a preparation which contained a sulfocyanate.

It is our purpose in reporting the following case to direct attention to sulfocyanates as an etiologic agent in the production of toxic erythema and exfoliative dermatitis:

REPORT OF CASE

A man, aged 55, had previously visited the clinic in 1928. At the time the symptoms and signs on physical examination had been associated with an advanced exophthalmic goiter. The reading for the basal metabolic rate had been + 83 per cent. A subtotal thyroidectomy had been performed. He had returned to the clinic three months later to report that he was enjoying excellent health. However, a moderately severe hypertension had been discovered. The value for the systolic blood pressure had been 205 mm. of mercury and that for the diastolic had been 135 mm. of mercury, in contrast to a very slight elevation in the value for the blood pressure prior to the thyroidectomy.

The patient was next observed at the clinic on May 19, 1936. His health had remained good until July 1934, when he had suffered from a cerebral thrombosis which had resulted in a right hemiparesis, from which he had rapidly recovered. During the two years before his last admission to the clinic, he had suffered from several moderately severe attacks of angina pectoris. On May 6, 1936, after such an attack, the value for the systolic blood pressure had been found by his physician to be 260 mm. of mercury. Two days later an elixir of sodium sulfocyanate had been prescribed in the dosage of three teaspoonfuls daily. He had continued to receive this medication for eleven days, at which time he had noticed a generalized eruption, "resembling the measles," over his body. Correspondence with the manufacturers of this elixir revealed that it contained 20 grains (1.3 Gm.) of sodium sulfocyanate in each fluidounce, so that the patient had received approximately

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4. Blum, H. F., and Spealman, C. R.: A Differentiation Between Photosensitized and Ultraviolet Effects on Frogs, Am. J. Physiol. **109**: 605 (Oct.) 1934.
5. Blum, H. F.; Watrous, W. G., and West, R. J.: On the Mechanism of Photosensitization in Man, Am. J. Physiol. **112**: 350 (Oct.) 1935.
6. Wolgemuth, J., and Sorenyi, E.: Ueber die Wirkung des Lichtes auf des Chemismus der Zelle: II. Versuche an roten Blutkorperchen, Biochem. Ztschr. **264**: 389, 1933.

From the Section on Dermatology, the Mayo Clinic.

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3. Borg, J. F.: Experiences in the Use of the Sulfocyanates, Minnesota Med. **12**: 293-296 (May) 1930. Egloff, W. C.; Hoyt, L. H., and O'Hare, J. P.: Observations in Thiocyanate Therapy in Hypertension, J. A. M. A. **96**: 1941-1942 (June 6) 1931. Gager, L. T.: The Incidence and Management of Hypertension, with a Note on Sulfocyanate Therapy, ibid. **90**: 82-86 (Jan. 14) 1928. Goldring, William, and Chasis, Herbert: Thiocyanate Therapy in Hypertension: I. Observations on Its Toxic Effects, Arch. Int. Med. **49**: 321-329 (Feb.) 1932. Palmer, R. S., and Sprague, H. B.: Four Cases Illustrating the Sulfocyanid Symptoms Which May Be Produced by the Use of Potassium Sulfocyanate in the Treatment of Hypertension, M. Clin. North America **13**: 215-220 (July) 1929.
4. Takács, Ladislaus: Versuche mit Rhodansalzen: I. Einfluss des Rhodan auf Magensekretion, weisse Blutkörperchen, Pulsschlag und Blutdruck, Ztschr. f. d. ges. exper. Med. **50**: 432-439, 1926.
5. Logefeil, R. C.: Observations on the Use of Potassium Sulfocyanate (Rhodan) in the Treatment of Essential Hypertension, Minnesota Med. **12**: 151-159 (March) 1929.
6. Weis, C. R., and Ruedemann, Rudolph: Exfoliative Dermatitis from Potassium Sulfocyanate Therapy, J. A. M. A. **93**: 988 (Sept. 28) 1929.
7. Ayman, David: Exfoliative Dermatitis from Potassium Thiocyanate, J. A. M. A. **93**: 1671 (Nov. 23) 1929.

5.4 Gm. of the drug before the appearance of the eruption. There was no history of other idiosyncrasies to drugs or of allergic states. The patient had tolerated the administration of iodine without incident in preparation for the thyroidectomy eight years before.

The patient was fairly well nourished but moderately ill. He weighed 141 pounds (64 Kg.). The pulse rate was 112 beats per minute, the temperature was 100.2 F., and the blood pressure was 180 systolic, 114 diastolic. The heart was moderately enlarged, with accentuation of the second aortic sound; there was an advanced peripheral arteriosclerosis for a man of his years. A small adenoma of the remaining thyroid tissue was also present.

The Kline reaction on the blood was negative. The value for the hemoglobin and the number of erythrocytes in the blood were normal. The leukocytes numbered 10,400 for each cubic centimeter of blood and an eosinophilia of 5 per cent was noted. The urinalysis showed albumin, grade *2* (on the basis of 1 to 4), and 8 erythrocytes for each high power field. A roentgenogram of the thorax revealed slight congestion in both lungs. The electrocardiographic tracings were indicative of hypertensive and coronary heart disease. The readings for the basal metabolic rate were at first elevated but returned to within normal limits after a period of treatment.

Examination of the skin revealed an acute papulo-urticarial eruption, which was widely distributed over the entire body, except the palms and soles. There was no pruritus. The eyelids were slightly edematous and there was moderate conjunctivitis with lacrimation. The pharynx was moderately congested and the uvula was swollen.

The patient was placed in the hospital for a period of three days and was given large amounts of fluid nourishment and mild alkaline diuretics and cathartics. Within a few days the erythematous character of the eruption subsided and a rather marked pigmentation remained at the sites of the original lesions. There was more or less superficial desquamation in the next few weeks.

Patch tests with 1 per cent aqueous solutions of sodium thiosulfate and potassium ferrocyanide and *2* per cent solutions of sodium sulfite and sodium sulfocyanate were applied for two days to the skin of the thigh, but no local reactions could be observed at the end of ten days. The conjunctivitis, pharyngitis and microscopic hematuria gradually disappeared, and the temperature returned to normal.

COMMENT

Claude Bernard [8] almost eighty years ago described experiments which showed the toxic manifestations of sulfocyanates. The pharmacologic and toxicologic properties of the drug have been ably reviewed by Nichols.[9] He calculated, on the basis of experiments with guinea-pigs, that the minimal lethal dose for a 154 pound (70 Kg.) man would be about 15 to 30 Gm. However, the tolerance of the individual patient to the drug varies greatly and many patients have tolerated a much larger dosage for a period of time without showing mental, gastro-intestinal or dermatologic manifestations of sulfocyanate intoxication. In thirteen cases reported by Goldring and Chasis,[3] the total dosage varied from 5.8 to 32.5 Gm. and the duration of medication in days also varied from seven to sixty-nine before toxic symptoms of sulfocyanate poisoning became evident. In the two fatal cases observed by these authors, only 9.7 and 14.5 Gm. had been ingested in fifteen days and eighteen days, respectively. The dosage commonly prescribed is from 0.3 to 1.0 Gm. daily for a period not to exceed three weeks. Barker,[10] in his study of the cyanates in the blood of patients who are undergoing treatment with sulfocyanates, recently found that the optimal therapeutic level would seem to range between 8 and 12 mg. for each hundred cubic centimeters of blood and that significant toxicity became evident at from 15 to 30 mg. It would appear that the toxic effects resulting from sulfocyanates are the result of a true idiosyncrasy to the drug rather than to an overdosage. The suggestion has also been made that the drug possibly possesses a cumulative action, as it is very slowly excreted in the urine. Healy [11] has suggested an accumulation of the drug in the adrenal glands.

Sodium sulfocyanate is believed to be less toxic than potassium sulfocyanate or ammonium sulfocyanate, but there is little evidence to support this.

The toxic dermatoses that have been reported following the use of sulfocyanates have been, in general, so briefly described that a satisfactory dermatologic picture of this drug eruption cannot be deduced. They apparently resemble either the toxic erythema seen in acute arsenic poisoning or the papulopustular eruption following iodide therapy. They usually appear within ten days after administration of the drug is begun and disappear rapidly after its cessation, often leaving a pigmentation and exfoliation which persist for only a few weeks. However, it is probable that serious consequences might result if the sulfocyanates are not recognized as the inciting cause and if their administration is not immediately discontinued.

SUMMARY

Preparations that contain a sulfocyanate continue to be used widely in the treatment of essential hypertension despite the known toxic manifestations. The dermatoses resulting from the use of this drug have not received the attention in the literature which their frequency deserves. Only nine cases have been reported. A case in which a toxic exanthem and pigmentation resulted from the use of potassium sulfocyanate has been reported.

8. Bernard, Claude: Leçons sur les effets des substances toxiques et médicamenteuses, Paris, J. B. Baillière et fils, 1857.

9. Nichols, J. B.: The Pharmacologic and Therapeutic Properties of the Sulfocyanates, Am. J. M. Sc. **170**: 735-747 (Nov.) 1925.

10. Barker, M. H.: The Blood Cyanates in the Treatment of Hypertension, J. A. M. A. **106**: 762-767 (March 7) 1936.

REGIONAL ILEITIS (CROHN)

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In 1932 Crohn, Ginzburg and Oppenheimer [1] described a disease entity which they termed regional ileitis and which they brilliantly isolated from a previously confused group of benign inflammatory lesions of the intestine. To this original description little has been added besides confirmatory clinical and pathologic observations.[2] Prior to 1932, descriptions of the disease are to be found only under such general headings as "nonspecific granulomas," "benign granulomas" or "infectious granulomas" in the American literature, and as "inflammatory tumors" or "phlegmons of the intestine" in European literature. In 1933 Harris, Bell and Brunn,[3] and Brown, Bargen and Weber [4] reported cases in which the disease involved portions of the intestine other than the terminal 8 or 10 inches of the ileum; namely, the jejunum, proximal ileum and colon. For the disease therefore they suggest the more inclusive names cicatrizing enteritis [3] and nonspecific regional enteritis.[4]

The etiology of the disease has never been established. Some investigators, notably Felson [5] and Jaffe,[6] have presented evidence to show that the primary lesions are produced by the dysentery bacillus. Felson believes that both regional ileitis and chronic ulcerative colitis have a common etiology and are the

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From the Department of Surgery, University of Nebraska College of Medicine.

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3. Harris, F. I.; Bell, G. H., and Brunn, Harold: Chronic Cicatrizing Enteritis, Surg., Gynec. & Obst. **57**: 637 (Nov.) 1933.

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5. Felson, Joseph: (*a*) New Clinical Concepts of Bacillary Dysentery, Tr. Am. Proct. Soc. **36**: 133, 1935; (*b*) Clinical Notes Concerning Distal Ileitis as a Manifestation of Bacillary Dysentery, Am. J. Digest. Dis. & Nutrition **1**: 782 (Jan.) 1935. (*c*) A Practical Etiological, Pathological and Clinical Consideration of Intestinal Ulceration, ibid. **1**: 297 (July) 1934. (*d*) Felson, Joseph; Rundlett, Emilie V.; Sullivan, James, and Gorenberg, Harold: Atypical Flexner Dysentery, J. A. M. A. **103**: 1055 (Oct. 6) 1934.

6. Jaffe, quoted by Cushway, B. C.: Illinois M. J. **68**: 525 (Dec.) 1934.

sequelae of bacillary dysentery. Bargen[7] holds that the disease, in common with chronic ulcerative colitis, probably results from several factors and micro-organisms, the most common of which is the streptococcus (Bargen's diplostreptococcus).

Because the case reported here may contribute some information with respect to etiology, it seemed worthy of record. In this case the dysentery bacillus was present in cultures from urine obtained directly from the right kidney. Its identity was established by fermentation and agglutination. However, Streptococcus haemolyticus was present in cultures from fluid free in the peritoneal cavity and from a mesenteric lymph node. Thus there is presumptive evidence that the dysentery bacillus, present in the urine, had played a part in the inflammatory process in the ileum and that Streptococcus haemolyticus, present also in the urine and in the peritoneal cavity and a regional lymph node, had been a secondary if not a primary invader of the bowel wall.

REPORT OF CASE

J. R., a girl, aged 8 years, was admitted to the University of Nebraska Hospital Jan. 31, 1934. Her health had been excellent until thirty-one days previously, when a severe headache, a sore throat and generalized body pains suddenly developed and she vomited several times. Five days later generalized abdominal pain, a mild diarrhea, and a fever of 102 F. developed and she vomited many times. The vomitus on two occasions contained streaks of blood. No eruption developed. In five days, ten days after the onset, she returned to school but continued to complain of generalized abdominal pain and fatigue. For two weeks she attended school periodically. The pain gradually shifted to the lower half of the abdomen and twenty-four hours before admission she became acutely ill. The pain became more severe and colicky in character, the temperature rose to 102 F., she again vomited several times and a diarrhea developed.

The family and past histories were essentially negative.

She was well developed and nourished, despite considerable loss of weight.

The head, neck, heart and lungs presented no abnormality. The abdomen was moderately distended and tender throughout but was acutely tender immediately below and to the right of the umbilicus, where a mass was palpable. This mass appeared to be approximately the size of a large orange and was situated in the midline below the umbilicus, with the major portion on the right side. It was slightly but definitely movable, somewhat irregular in contour, tender and firm but not hard. These observations were confirmed by bimanual rectal examination, which also demonstrated the pelvic organs to be normal and the mass to be above the true pelvis.

The back and the extremities and the reflexes were normal.

Except for an occasional white and red blood cell the urine on several examinations was normal. Examination of the blood revealed the Wassermann reaction negative, hemoglobin 86 per cent (Sahli), red blood cells 4,340,000 and white blood cells 29,600, with staff polymorphonuclears 10 per cent, segmented polymorphonuclears 69 per cent and lymphocytes 21 per cent. The serum did not agglutinate Bacillus typhosus, Bacillus paratyphosus A and B, and Brucella melitensis. Two blood cultures gave no growth. Three stools contained undigested food and much mucus but no blood, ova, cysts, amebas or abnormal micro-organisms. Cultures of three stools yielded only bacteria that normally inhabit the bowel.

Roentgenograms of the chest, abdomen and urinary tract gave the following information: Intravenous pyelography showed no abnormality, the lung fields and pleural sacs were normal, and the heart was not enlarged. The gas-filled, distended loops of small bowel appeared separated as by fluid, and in the right iliac fossa just mesial to the cecum there was an area of increased density measuring 7 by 5 cm., suggesting a pericecal mass which under the fluoroscope was movable. With a barium sulfate enema the colon filled normally and no abnormality was found. The previously described mass did not appear to be connected with the cecum. Proctoscopic examination revealed no abnormality of the anal canal, rectum or lower sigmoid.

On admission the temperature was 103 F., the pulse 120 and the respiration rate 30. These rapidly subsided and were normal until the seventh day, when suddenly they recurred, as did the pain in the lower part of the abdomen and the vomiting. The mass had remained unchanged. It was believed that it was not an appendiceal abscess because it was irregularly shaped and slightly movable (not fixed).

An exploratory operation revealed the following changes: There was considerable slightly turbid free fluid throughout the abdomen. Cultures of this were taken. Except for the terminal 8 inches, the small bowel was moderately distended. The great omentum was very thick, mildly injected and edematous. The walls of the cecum and of the terminal 8 inches of the ileum were moderately injected, spotted with petechiae, covered in areas with fibrinous exudate, edematous, rigid, and several times normal thickness to palpation. They were firm and elastic but not hard. The lumen of the ileum did not appear to be obstructed, gas passing freely through it. The mesenteries of both the ileum and the cecum were approximately 2 inches thick and felt brawny. They contained many large lymph nodes, one of which was excised for both pathologic and bacteriologic examinations. Except for a thickened and slightly edematous wall, the appendix appeared to be normal. It was removed and the peritoneal cavity was closed without drainage. A Penrose wick was placed in the abdominal wall down to the peritoneum. These observations seemed consistent with those reported by Crohn and his associates, so a provisional postoperative diagnosis of regional ileitis was made.

Cultures from both the peritoneal fluid and the mesenteric lymph node yielded Streptococcus haemolyticus. Microscopically the appendix was essentially normal and the lymph gland edematous with endothelial hyperplasia and with the presence of some foreign body giant cells.

The immediate postoperative convalescence was rather stormy and complicated by a wound infection, cultures from which yielded Streptococcus haemolyticus.

A few days after operation there appeared in the urine albumin, casts and many red and white blood cells, and, since these persisted for weeks after the patient's general condition was much improved, a cystoscopic examination was made by Dr. Edwin Davis, who reported that the urethra and bladder were normal, with no ureteral obstruction on either side. Plain films were negative; each kidney functioned normally; pyelograms were normal on either side.

The bacteriologic report of urine obtained through ureteral catheters was as follows: Urine from the left kidney contained a few white blood cells and hyaline and granular casts. Smear revealed gram-negative bacilli and gram-negative cocci; culture yielded Bacillus coli, Bacillus mucosus-capsulatus, Bacillus pyocyaneus and no tubercle bacilli. Analysis of urine from the right kidney gave identical results with the addition of Staphylococcus aureus and dysentery bacilli.

The wounds gradually healed, the mass slowly disappeared, and the patient was discharged, apparently well, sixty-six days after operation and has remained perfectly well to the present, now two years following operation.

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7. Bargen, J. A., in discussion on Felson.[36]

THROMBO-ANGIITIS OBLITERANS AND ADDISON'S DISEASE IN THE SAME PATIENT

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Since there is no record in medical literature of the occurrence of thrombo-angiitis obliterans and Addison's disease in the same patient, the following case is of unique interest:

H. G., a white youth, aged 20 years, seen in April 1935, stated that he was in excellent health until the summer of 1934, when he began to complain of pain in the toes of the left foot. This was thought to be due to a weak metatarsal arch. About two months later he first noticed pain in the left calf on walking and then found that he could not walk more than three blocks without stopping to rest. In December 1934 he observed that the left great toe became blue whenever it was put in warm water. In January 1935 ulceration developed in this toe and his physician applied a tannic acid dressing, following which gangrene of the entire toe developed. The toe was then amputated. A severe infection on the plantar surface of the foot proximal to the stump developed and was incised. The loose head of the first metatarsal bone was removed.

He used to smoke twenty cigarets a day but stopped smoking in December 1934. His weight was 185 pounds (84 Kg.) in 1933. Between this time and December 1934 his weight went

down to 160 pounds (73 Kg.). From December 1934 to April 1935 there was a further loss of weight down to 125 pounds (57 Kg.).

When first seen there was a granulating wound over the stump of the left great toe 3 cm. in diameter. On the plantar surface of the foot overlying the first metatarsal bone there was a deep incision about 5 cm. long exposing necrotic tendons. The circulation in the upper extremities was normal. Both femoral arteries pulsated normally. Tie right popliteal artery was open, the left was closed. The right dorsalis pedis pulsation could be felt. The right posterior tibial was closed. There was no pulsation in the left foot. The oscillometer readings were: calf, left very faint; ankle, left 0, right 2. The general physical examination was entirely negative. The Wassermann test was negative.

A diagnosis of thrombo-angiitis obliterans was made and treatment was begun with intravenous injections of 5 per cent sodium chloride solution. The condition of the foot responded favorably and six weeks after the patient was first seen he was discharged from the hospital with the foot entirely healed. He went away to the country for a month and on his return to the city injections of hypertonic salt solution were resumed. At this time he first began to complain of weakness and occasional vomiting spells. He stated that during the past three months there had been gradually increasing pigmentation of his face. He attributed this to exposure to the sunlight. He also complained of diarrhea. On examination at this time pigmentation was noticed on the mucous membranes of the mouth; the blood pressure was found to be 80 systolic, 50 diastolic. A diagnosis of Addison's disease was made and the patient was readmitted to the hospital. At this time his weight was 107 pounds (48.5 Kg.). There was striking pigmentation of the face, mucous membranes, chest and back, the extensor surface of the elbows, and the anal fold. There were typical black freckles in these areas. The systolic blood pressure continued to range between 80 and 95. X-ray examination of the chest and the abdomen with particular reference to the adrenals failed to show any evidence of tuberculosis. The blood urea was 14 mg. per hundred cubic centimeters, blood sugar 75 mg., blood chlorides 540 mg. and hemoglobin 70 per cent. Many urine examinations were negative. The patient continued to be treated with injections of hypertonic salt solution and in addition was given 6 Gm. of sodium chloride in enteric coated capsules by mouth. He was placed on a high calory diet with increased salt and received vitamins and 30 grains (2 Gm.) of saccharated ferrous carbonate three times a day. He was also given injections of a commercial adrenal extract (eschatin-Parke, Davis & Co.) 2 cc every other day. He continued to lose strength and his weight went down to 93 pounds (42 Kg.).

At this time (September 18) the patient was seen in consultation by Dr. Leonard G. Rowntree, who confirmed the diagnosis of Addison's disease. He stated that the history of the patient, his weight loss, the blood pressure, the pigmentation (buccal, labial, cutaneous, and the black freckles) were all compatible with Addison's disease. The weight loss was about what he would expect from the duration and severity. He could discern no clinical evidence of tuberculosis or syphilis. The cause was not determined. The combination of thrombo-angiitis obliterans with Addison's disease was unique in his experience. It might be due to atrophy on a vascular basis. The outlook was grave, he said, but not hopeless so far as Addison's disease is concerned.

Another adrenal extract, made by the method of Swingle and Pfiffner, was obtained through Dr. Rowntree and the patient was started on 2 cc. of this substance twice a day. With the beginning of this treatment, his weight began to increase and his general condition improved. The blood pressure increased to 100 systolic, 60 diastolic, and remained at this level. At the time of his discharge from the hospital on October 19 his weight was 105 pounds (47 Kg.). His hemoglobin was 80 per cent and the red blood cell count 4,400,000. Injections of hypertonic saline solution were continued at the office twice a week, and the patient took injections of 5 cc. of this adrenal extract daily. Between October 1935 and March 1936 his weight increased to 140 pounds (63.5 Kg.). His walking improved strikingly and he was able to walk ten blocks at a fair pace without pain in his left foot. The left foot remained healed. The oscillometer readings increased to: calf, left ¾, right 4; ankle, left ¼, right 2½. The systolic blood pressure continued to be about 100.

In April 1936 the patient developed an acute catarrhal icterus. He was readmitted to the hospital at this time. In addition to the icterus, enlargement of the spleen and liver was noted. Intravenous injections of 5 per cent dextrose in physiologic solution of sodium chloride were substituted for the hypertonic salt solution, and the other medication was continued as before. The dose of adrenal extract was increased to 10 cc. daily. The jaundice cleared up completely in a few weeks, and the liver and spleen returned to normal size. Following the suggestion of Wilder and his co-workers[1] of the Mayo Clinic, a low potassium diet was prescribed. The patient was discharged from the hospital at the end of May weighing 142 pounds (64 Kg.). He has continued in excellent general condition to date.

COMMENT

The occurrence of two diseases in a single individual is always of interest, particularly when the two conditions are so rare as thrombo-angiitis obliterans and Addison's disease. The coincidental occurrence of the two diseases in one person may be regarded as evidence that they are not antagonistic. This information may be of value in understanding the nature of the disease processes.

Although the use of tobacco appears to be the active cause of thrombo-angiitis obliterans, a constitutional susceptibility to this substance is necessary as a background. It is still not clear of what this constitutional defect consists and what mechanism it is by which tobacco produces its harmful results in such individuals. Recent studies of blood volume,[2] chemistry[3] and basal metabolism[4] would appear to indicate that in thrombo-angiitis obliterans there is a tendency to diminished function of the thyroid-adrenal-gonad chain of endocrine glands. The occurrence of Addison's disease in a patient with thrombo-angiitis obliterans offers additional evidence in favor of this conception.

Could the Addison's disease be due to atrophy of the suprarenal glands secondary to obstruction of their blood supply by the vascular disease? While thrombosis of intra-abdominal arteries has been observed in patients with thrombo-angiitis obliterans, this has always been a feature of very advanced and late stages of the disease.[5] In such cases all the vessels in the lower extremities have been occluded, and thrombosis frequently has extended upward into the lower part of the aorta. Isolated occlusion of the arterial blood supply of both adrenal glands by thrombo-angiitis obliterans has never been reported. In this patient the vascular disease is only moderately advanced, and intra-abdominal involvement seems unlikely.

It is interesting to note the unusually good effect that followed the employment of the adrenal extract of Swingle and Pfiffner. Throughout the early course of the Addison's disease, the patient received a high salt intake, intravenous salt injections and 6 Gm. of salt extra each day, along with eschatin, and continued to lose ground throughout. When, however, 5 cc. of the laboratory extract was substituted for the commercial preparation (eschatin) the patient at once began to improve. His weight rapidly increased from 93 to 140 pounds (from 42 to 63.5 Kg.). This is striking evidence of the value of the Swingle and Pfiffner preparation.

1126 Park Avenue.

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2. Silbert, Samuel; Kornzweig, A. L., and Friedlander, Mae: Thrombo-Angiitis Obliterans (Buerger): IV. The Reduction of Blood Volume, Arch. Int. Med. **48**: 948 (June) 1930.

3. Friedlander, Mae, and Silbert, Samuel: Thrombo-Angiitis Obliterans (Buerger): VI. Chemistry of the Blood, Arch. Int. Med. **48**: 500 (Sept.) 1931.

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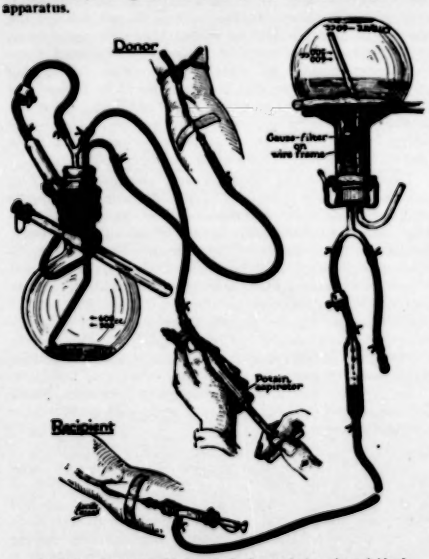
5. Averbuck, S. H., and Silbert, Samuel: Thrombo-Angiitis Obliterans (Buerger): IX. Cause of Death, Arch. Int. Med. **54**: 436 (Sept.) 1934.

A SIMPLIFIED METHOD OF TRANSFUSING CITRATED BLOOD

ROBERT R. BATES, M.D., CHICAGO

This method of transfusing blood is so simple that it is now preferred by the transfusion service at Passavant Memorial Hospital. No claim for originality in the separate features is made. The system is completely closed and sterilized in advance of need, thus obviating the necessity of an operating room.

A liter Florence flask is fitted with a two-hole rubber stopper through which a long U tube reaching to the bottom conducts the donor's blood when the flask is upright but acts as an air vent when the flask is inverted to discharge the blood. The other hole in the stopper admits a short glass Y tube, one arm of which connects to a detachable Potain aspirator providing suction when drawing the blood. The other arm of the Y (conducting blood to the recipient after the bottle is inverted) is equipped with a drip view and 3 feet of rubber tubing terminating in a small side arm intravenous syringe. Pinch clamps on each side of the Y, a gauze filter on coiled wire in the neck of the flask, and glass covers over the needles complete the apparatus.



Apparatus for a simplified method of transfusing citrated blood.

A nurse in sterile gown and gloves assembles the previously autoclaved parts into a unit, which is then laid aside ready for future use. The assembly includes placing 60 cc. of 2.5 per cent sodium citrate solution in the flask and inserting the filter and the stopper with the attached tubing. Finally the No. 16 donor's needle and the No. 18 recipient's needle are fitted with glass covers and the unit is then placed upright in a sterile bag.

The preparation of either donor or recipient with iodine and alcohol and tourniquet is as simple as drawing blood for a Wassermann test. Strong suction should not be used in drawing the blood; the flask should be agitated gently and when the desired amount of blood is drawn (up to 600 cc.) the donor's needle and tubing are immediately detached and washed. The rate of flow into the recipient may be increased by forcing air into the U tube with the Potain aspirator, but this procedure is rarely necessary. Hot water bottles placed about the flask and against the exit tubing insure warm blood for the recipient.

303 East Chicago Avenue.

From the Division of Surgery, Northwestern University Medical School.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.—ED.

THE THERAPY OF PARASITIC DERMATOSES

IN COLLABORATION WITH THEODORE CORNBLEET, M.D.

The meaning of the term "parasitic dermatoses" is restricted here to skin infestation with animal parasites, the term infection being employed for invasion of the skin by bacteria. In clinics dealing with the less fortunate members of society, animal parasites account for nearly 10 per cent of dermatologic cases.

In contrast to the bacterial diseases in which immunity develops and which are therefore self limiting, the parasitic disorders last as long as the parasites are present. It is true, however, that persons exposed to skin parasites for a long time become so accustomed to them that they seem bothered but little by them, while those newly infested suffer a great deal.

PEDICULOSIS

There are three types of infestation, depending on the type of parasite. These are head louse, body louse and pubic louse.

HEAD LOUSE INFESTATION.—*Diagnosis.*—Itching of the scalp, especially in children, possibly accompanied by a pustular eruption in the occipital region, should always lead to a search for pediculi and their ova ("nits"), which latter are attached in a characteristic acute angle to the hair shaft. The occiput and the region behind the ears are the most heavily infested. The occipital glands are frequently enlarged and they may suppurate. In extreme cases the hair may be matted together by dried exudate of an offensive odor.

Treatment.—Preparatory: Clipping the hair facilitates the treatment but it is not necessary and is certainly inexcusable in girls and women, unless the hair is so matted that it is impossible to apply the necessary remedies.

Killing of the Parasites: (*a*) Mercurial lotion. Most cleanly and hence generally best is the thorough sponging into the scalp and hair of a 1:500 solution of Mercury Bichloride in Diluted Alcohol twice daily for several days in succession. The chief disadvantage of this lotion is that it produces a burning sensation if the surface of the skin is damaged. A more dilute solution should then be used. (*b*) Oiling the scalp. While lice cannot be drowned in water, they can be drowned in oil. The thorough application of a thick layer of petrolatum suffices. The head is covered with a bathing cap or a suitably folded towel, which is left on over night. The petrolatum is then removed as thoroughly as possible by the use of sweet oil, after which the scalp is thoroughly washed with soap and hot water. (*c*) Benzene (5 per cent) petrolatum. Adding as many drops of benzene as there are grams of petrolatum facilitates its introduction into the respiratory apparatus of the para-

sites (prescription 1). The head is coated thickly with this ointment and washed a half hour afterward. The head covering that was worn by the patient should also be disinfected.

Softening and Combing Out of the "Nits": As the ova are not killed by this process and hatch within six days after they are laid and then develop into fully grown lice within two weeks, they must be slipped off the hair shaft. Following the treatment described the scalp is therefore generally treated at bedtime with warm vinegar and enveloped in a rubberized cloth. The next morning the scalp is washed with soap. The eggs are still in place but softened. A fine toothed comb

PRESCRIPTION 1.—*Benzene Petrolatum*

℞ Benzene ..... 1.50 cc.
Petrolatum ..... 30.00 Gm.
Apply to scalp freely. (Against head lice.)

removes them from the hair as one removes a ring from a finger. A week of watching must follow to be sure that not one egg is left.

Diluted Acetic Acid added to the suggested mercurial lotion combined with the diligent use of the fine-toothed comb unites all the essential requirements in one simple treatment (prescription 2).

PRESCRIPTION 2.—*Acetous Mercurial Lotion (Strong)*

℞ Mercury bichloride ..... 0.24 Gm.
Diluted acetic acid..... 6.00 cc.
Diluted alcohol ..... 120.00 cc.
M. Label: Apply to scalp twice daily followed by use of fine toothed comb. (Against head lice.)

Pyodermatitis, if present, is perhaps best treated by Ammoniated Mercury Ointment, applied twice a day. If the lesion is irritable this will have to be diluted with 1 or 2 parts of Simple Ointment.

BODY LOUSE INFESTATION. — *Diagnosis.* — These should be called "clothes lice," as they merely invade the body on their foraging expeditions. They should be sought for in the seams of the clothing, especially where it fits close to the body as over the pectoral and pelvic girdles. These lice are large enough to be easily seen. In addition to the small blood crusted puncta, characteristic of this infestation are parallel scratch marks over the shoulders, around the waist and over the sacrum and the thighs. The presence of these should lead to a search for the lice in the clothing. Delousing measures are important in the prophylaxis of typhus, relapsing fever and trench fever.

Treatment.—Disinfestation: (*a*) The clothing and blankets should be disinfested by autoclave (130 F. for thirty minutes or 140 F. for fifteen minutes). Ironing of the clothing, especially the seams, is much less reliable. (*b*) The clothing may be soaked in 2 per cent dilution of Saponated Solution of Cresol at a temperature above 32 F. for twenty minutes or (*c*) dipped in gasoline or in cleaners' naphtha. (*d*) Sulfur may be dusted on the inner surfaces of the clothing to lessen the chances of reinfestation after it has been subjected to any one of these processes. (*e*) Fumigation of huts or other places that were inhabited by infested groups of men is quite as necessary as is disinfestation of their clothing, to kill wandering lice, which may live without feeding for as long as ten days. Sulfur dioxide or hydrocyanic acid (CAUTION) gas should be employed. Formaldehyde is useless.

Cleansing Bath: A cleansing bath with soap and hot water suffices for the individual.

Destruction of Ova: This is especially required when dealing with groups of men. For this purpose a bath and a mercurial lotion (prescription 3) are usually sufficient in body louse infestation.

Treatment of the Damaged Skin: If much irritation is present, a soothing application is indicated, such as Calamine Liniment, possibly with an antipruritic agent such as 0.5 to 1 per cent phenol if required to break the pruritus vicious circle (see Pruritus). Ammoniated Mercury Ointment may be used on secondarily infected pyodermatitic areas.

PRESCRIPTION 3.—*Acetous Mercurial Lotion (Mild)*

℞ Mercury bichloride ..... 0.06 Gm.
Diluted acetic acid ..... 6.00 cc.
Diluted alcohol ..... 120.00 cc.
M. Label: Apply to affected parts twice daily. (Against pubic lice.)

PUBIC LOUSE INFESTATION.—*Diagnosis.*—Pubic lice ("crabs") most commonly affect the pubic region, producing itching, papules and secondary excoriations and dermatitis, which may extend to the scrotum and inner sides of the thighs. They may also affect the abdomen and buttocks as well as the presternum and such distal areas covered with short stiff hairs as the eyebrows, eyelashes, beard and axillae. They do not inhabit the scalp. In fair persons or those otherwise susceptible, pigmented macules may be seen at the infested sites. Whenever there is no other obvious cause for itching in the genital region, the lice ova should be looked for with a hand lens. The pediculi are small and lie at the base of hairs, holding firmly to the follicle. The infestation is contracted from intimate contact with those having lice on their clothing or on their bodies.

Treatment. — The simplest and cleanest way is to sponge the parts with a 1:2,000 Mercury Bichloride solution twice daily for three or four days in succession; then less frequently, every three to seven days, for two to three weeks. The Mercury Bichloride solution may preferably be made in Diluted Alcohol, and 5 per cent acetic acid (prescription 3) may be added. The much used Mercurial Ointment, even the "mild," is often too strong and should not be used here. A quick immediate cure should not be looked for. The thicker the growth of hair, the more diligently and the longer should the treatment be employed.

To remove nits and pediculi from eyelashes, small forceps should be used, followed with Yellow Mercuric Oxide Ointment.

SCABIES

Scabies is a classless infestation. Although seen more often in the clinic, scabies is by no means confined to the poor and unhygienic. It is easily recognized when well marked but is often a problem in diagnosis in the cleanly. Its one outstanding feature, severe itching, should make it a suspect whenever this is a symptom, particularly if it occurs at night. While benign and easily cured, it distresses greatly and may lead to unpleasant complications. Scabies challenges treatment not only of the immediate subject but also of the source and those exposed. Whether in the army or the family, scabies should be treated with a view to the group. Only thus can cross and recurrent infestation be prevented.

Diagnosis.—Three characteristics point to the recognition of scabies. The severe itching, usually nocturnal, is first. The type of lesions—the unique, thin, zigzag line—under a lens is a series of black or gray dots usually one-fourth inch long but may be shorter or much longer. Also present may be small papules and a characteristic bluish opal vesicle and scratch marks with small blood crusts. Most reliable is the distribution of the lesion. It is symmetrical, is absent above the clavicles, and avoids the palms and soles except in infants and young children. In men it may involve the

penis or in women the breasts and nipples. Otherwise lesions appear thickest on the dorsa of the webs of the fingers and sides of the fingers and on the flexor surface of the wrists and elbows, the anterior axillary fold, the ankles and the buttocks. Any other area may be involved. The number of lesions may be great in the unhygienic, among whom scabies is most characteristic. They are scanty in the cleanly, in whom diagnosis is difficult and may have to be made by exclusion or because of the itching. It is of aid in these ill defined cases to find burrows and it is diagnostic to extract from these minute tracts the causative animalcule, the acarus of scabies. Experience makes one adept at piercing the small grayish speck at the blind end of the burrow and bringing up on the tip of the needle or blade the clinging organism recognizable under the low power microscope.

Treatment.—All clothing that has been in contact with the skin during the course of the disease must be boiled, laundered or dry cleaned (which means a thorough immersion in naphtha). The patient should take a prolonged warm bath, thoroughly scrubbing with soap and brush. After drying the skin the remedy is applied to the entire skin below the clavicles. Sulfur ointment, preferably diluted (prescription 4), is to be used night and morning for a total of six times. Then

PRESCRIPTION 4.—*Diluted Sulfur Ointment*

℞ Sulfur ointment ..... 30.00 Gm.
Ointment ..... 30.00 Gm.
M. Label: Apply to entire body below collar bones. (For scabies.)

the bath is repeated and the clothes worn during the treatment should be boiled, laundered or dry cleaned. The "clean up" is the most important part of the treatment and also the most difficult to get carried out thoroughly, as well as the most expensive. For children, one-half or one-fourth the strength of the ointment used for adults should be prescribed. For those who have an idiosyncrasy against sulfur, 5 or 10 per cent betanaphthol ointment (prescription 5) should be resorted to. "One day cures," such as the Danish treatment, are apt to be too irritative.

PRESCRIPTION 5.—*Betanaphthol Ointment*

℞ Betanaphthol ..... 0.15 Gm.
Ointment ..... 30.00 Gm.
M. Label: Apply to entire body below collar bones. (For scabies.)

Continuance of the itching means (*a*) that the treatment was not thorough enough, (*b*) reinfestation from contacts, (*c*) residual irritation of the skin, possibly aggravated by the treatment, or (*d*) habit formation.

(*a*) To exclude the first possibility, one may repeat the treatment, which should always suffice.

(*b*) Infested contacts must be eliminated by treatment of these, or otherwise.

PRESCRIPTION 6.—*Borated Cold Cream*

℞ Boric acid ..... 3.00 Gm.
Rose water ointment ..... 30.00 Gm.
M. Label: Apply locally. (To soothe and soften.)

PRESCRIPTION 7.—*Diluted Ammoniated Mercury Ointment*

℞ Ammoniated mercury ointment ..... 15.00 Gm.
Ointment ..... 15.00 Gm.
M. Label: Apply to lesions. (For pus infestation of skin.)

(*c*) Residual irritation requires that the skin be soothed by Calamine Lotion or other bland application, or by 10 per cent borated cold cream (prescription 6) if it is excessively dry. If there is much trauma or if there are many raw areas from wild scratching, these should be cared for even before instituting measures for the scabies itself. Colloid baths and Calamine Lotion or Liniment help to prepare a badly scratched and traumatized skin for the more specific and irritating scabies ointment. For pus infections, half strength Ammoniated Mercury Ointment (prescription 7) may be used after sponging with Mercury Bichloride Solution to remove the crusts.

(*d*) Habit requires psychotherapy, possibly plus Calamine Lotion as a placebo (see Pruritus).

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

ICHTHAMMOL.—Bitumen Sulphonatum, N. F. V.—Ammonium Ichthosulfonate.—"Ichthammol is obtained by the destructive distillation of certain bituminous schists, sulfonating the distillate, and neutralizing the product with ammonia." *N. F.*

For standards see the National Formulary under Ichthammol.

Actions and Uses.—See general article, Sulfoichthyolate Preparations and Substitutes, New and Nonofficial Remedies, 1936, p. 424.

Ichthyol.—A brand of Ichthammol, N. F.

Manufactured by the Ichthyol Company, Rahway, N. J. (Merck & Co., Inc., Rahway, N. J., distributor). No U. S. patent. U. S. trademark 62,603.

Ichthyol conforms to the standards of Ichthammol, N. F. VI, and in addition to the following standards: Dissolve 10 Gm. of ichthyol in 90 cc. of water, in a glass-stoppered cylinder and allow to remain undisturbed for twenty-four hours: no deposit forms. Transfer 0.5 to 1 Gm. of ichthyol accurately weighed to a Kjeldahl flask, dilute with 30 cc. of water, add 5 Gm. of potassium chlorate and 30 cc. of hydrochloric acid, evaporate the mixture to about 5 cc., add 25 cc. of hydrochloric acid, evaporate this solution to about 5 cc. again add 25 cc. of hydrochloric acid, evaporate to about 5 cc., then add 100 cc. of water; heat the solution to boiling, add 10 cc. of barium chloride solution, allow the mixture to stand twenty-four hours; the weight of the precipitated barium sulfate determined in the usual way will correspond to at least 10 per cent of total sulfur. If the ammonia contained in the ammonium sulfate as previously determined in ichthyol is calculated, and the result subtracted from the "total ammonia" as previously determined, the remainder will represent the ammonia combined with the organic sulfonic acids. If this value is multiplied by 1.88 the result will represent the sulfur present in the sulfonic acids in an oxidized state; i. e., the "sulfonic sulfur." If the sulfur contained in the ammonium sulfate as previously determined in ichthyol is calculated, and the result subtracted from the "total sulfur" as previously determined, the remainder will represent the sulfur present in the organic sulfonic acids contained in the substance. If the "sulfonic" sulfur in ichthyol as previously calculated is subtracted from the sulfur in the organic-sulfonic acids as previously calculated, the remainder will correspond to at least 5.5 per cent of "organic" ("sulfide") sulfur.

RABIES VACCINE (See New and Nonofficial Remedies, 1936, p. 376).

The Cutter Laboratories, Berkeley, Calif.

Rabies Vaccine (Semple).—Also marketed in packages of seven vials, each containing 1 cc.

BACTERIAL VACCINE MADE FROM THE TYPHOID BACILLUS (See New and Nonofficial Remedies, 1936, p. 401).

The Cutter Laboratories, Berkeley, Calif.

Typhoid Prophylactic.—Also marketed in bottles of 20 cc. containing 1,000 million killed typhoid bacilli per cubic centimeter.

McKESSON'S HALIBUT LIVER OIL WITH VITAMIN D CONCENTRATE IN NEUTRAL OIL, 6 CC.—Halibut liver oil with added natural vitamin D obtained from cod liver oil and other fish liver oils. It is assayed to have a potency of not less than 59,000 units (U. S. P.) of vitamin A per gram and not less than 1,000 units (U. S. P.) of vitamin D per gram.

Manufactured by the International Vitamin Corporation, New York (McKesson & Robbins, Inc., Bridgeport, Conn., distributor). The vitamin D concentrate used is made under U. S. patent No. 1,690,091.

DIGITALIS (See New and Nonofficial Remedies, 1936, p. 168).

Tablets Digitalis Whole Leaf-Lederle, ¼ grain: Each tablet contains ½ cat unit.

Tablets Digitalis Whole Leaf-Lederle, 1½ grains: Each tablet contains 1 cat unit.

Tablets Digitalis Whole Leaf-Lederle, 3 grains: Each tablet contains 2 cat units.

Prepared by the Lederle Laboratories, Inc., Pearl River, New York.

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

DEXTROSE

Its Place in the Diet of Normal Adults

Sugars and foods rich in carbohydrates have been an important part of the diet from the earliest times. With the development of manufacturing processes, chemically pure sucrose, prepared usually from sugar cane or the sugar beet, gradually assumed a prominent place in the diet of the American people. Mendel[1] pointed out that the average per capita consumption of this chemically pure substance has changed from a relatively insignificant figure in prerevolutionary days to approximately one fifth of the average caloric intake in 1924. In recent years chemically pure dextrose, usually prepared from corn starch, has become available and is being promoted largely to replace part of the sucrose of the diet. Dextrose occurs naturally in many ordinary foods, in honey, in grape juice and other fruit juices, and in maple syrup. Dextrose is obtained as one of the products of the digestion of cane sugar and milk sugar, and it is the end product of the digestion of starches and of maltose. Within the body dextrose can be formed from glycogen, amino acids, the glycerol of fats, and probably from levulose and galactose. Thus it is apparent that there are a considerable number of sources of this important carbohydrate.

The wide occurrence of dextrose in foods, the vast literature of biochemical and physiologic investigations of this substance, and the claims made in advertising have led the Council to consider it desirable to publish a brief report on the significance of dextrose in the diet of the normal adult. It is the purpose of the present report to consider the evidence available on the nutritive properties of dextrose and to formulate for the guidance of interested persons claims which in the opinion of the Council are justified for this product.

An important property of dextrose is its sweetness as compared with other sugars. It is well known that certain sugars such as lactose from milk are not as sweet as ordinary cane sugar. In 1925 Biester, Wood and Wahlin[2] studied the relative sweetness of a number of pure sugars. They gave sucrose the arbitrary value of 100 and found that lactose was about one-sixth as sweet or had a value of 16. Levulose was observed to be almost twice as sweet as sucrose, its value being 173; dextrose on the same scale was recorded as 74. If sweetness is the consideration most desired, more dextrose must be used in a food mixture to produce the effect than either levulose or sucrose. Under certain conditions this property may be an advantage, under others a disadvantage. A number of physical and chemical properties limit the extent to which dextrose may be substituted for cane sugar; but these concern chiefly technical problems and are therefore outside the scope of the present report.

An enormous amount of experimental evidence has been accumulated on the subject of carbohydrate metabolism. It is well known that the digestion of carbohydrate results in the formation of three important monosaccharides—dextrose, levulose and galactose. Quantitatively dextrose is the most important, largely because starch, which yields dextrose on digestion, makes up the bulk of the carbohydrate of the diet. Deuel[3] has recently reviewed the available information on the metabolism of fructose and galactose. These two carbohydrates are absorbed into the portal blood and carried to the liver, where they are believed to be largely converted into dextrose and ultimately into liver glycogen. Some fructose and some galactose circulate in the systemic blood stream after the ingestion of these sugars or of carbohydrates which yield them during digestion, and there is considerable evidence that non-dextrose sugars may be oxidized or transformed to glycogen or fat.

Dextrose is the normal sugar of the blood. It is an important source of muscular energy. Although it has been called the fuel of muscular exercise, there is plenty of evidence that it is not the only fuel. Many physiologists have called dextrose the "physiologic" sugar. While this term is an expression of convenience and serves to emphasize to medical students the fact that sterile solutions of dextrose of proper concentration may be administered parenterally, yet as Deuel[3] has emphasized, other sugars are found in the body either temporarily following the ingestion of certain carbohydrates or permanently as pentoses, combined in the form of nucleic acids, which occur in the nuclei of all cells. Galactose is present as galactolipids in nervous tissue and it is also a constituent of lactose formed by the mammary glands. If dextrose is designated as the physiologic sugar, these other carbohydrates are certainly not pathologic. There are limitations, therefore, to the applicability of the slogan "dextrose, the physiologic sugar," especially when this term is loosely used by writers of advertising copy. Dextrose derived from dextrins, starch or protein certainly is no less valuable as a food than dextrose itself.

Because dextrose is absorbed as such and circulates unchanged in the blood stream, it has been supposed that it would be absorbed quickly and with no effort on the part of the body because it requires no enzymic process to make it suitable for absorption. Certainly dextrose is not as rapidly absorbed as the advertisements of some manufacturers would lead the uncritical reader to believe. Dextrose must be in solution and must reach the duodenum before it can be absorbed, since absorption does not take place from the stomach. Experimental evidence does not indicate that the rate of absorption of dextrose is significantly more rapid than that of many other carbohydrates of physiologic importance.

Maile and Scott[4] studied the relative rates of disappearance from the stomach of different sugars by means of roentgenograms taken after barium sulfate meals. They found in a few observations that sucrose left the stomach somewhat earlier than dextrose. However, their experiments were few in number, and the rapidity with which different solutions leave the stomach is not necessarily an index of the relative rates of absorption. By means of animal experiments, Cori[5] showed that, of the three important monosaccharides, galactose was absorbed somewhat more quickly than dextrose, and both of these sugars were absorbed much more quickly than levulose. It would seem that the pure monosaccharides which Cori fed might be absorbed more quickly when given in this form than when given in the form of polysaccharides, which require preliminary enzymic changes before absorption can take place. No extensive studies of the relative rates of digestion and absorption of disaccharides and polysaccharides have been made by the technic which Cori used.

In man the rate of absorption has also been studied by the determination of changes in the blood sugar. Following the administration of digestible carbohydrates, the blood sugar rises above the usual fasting level, as might be expected, but the rate and extent of rise is not the same for all carbohydrates. Folin and Berglund[6] showed that the administration of dextrose was followed by a rapid increase in the concentration of blood sugar but that other sugars such as levulose had little effect. Foster[7] likewise found that the ingestion of levulose resulted in but little increase in the blood sugar level. In such experiments the concentration of sugar in the blood is determined by the balance which exists between the rate at which sugars enter the blood from the gastro-intestinal canal and the rate of disappearance of the sugar from the blood. It is therefore difficult to interpret blood sugar curves on the basis of the rate of absorption from the gastro-intestinal tract only. It must be concluded from experimental evidence, however, that the blood sugar studies do show that dextrose is absorbed

1. Mendel, L. B.: Our Changing Food Habits, in Your Weight and How to Control It, edited by Morris Fishbein, New York, George H. Doran Company, 1927.

2. Biester, Alice; Wood, Mildred W., and Wahlin, Cecile S.: Carbohydrate Studies: I. The Relative Sweetness of Pure Sugars, Am. J. Physiol. **73**: 387 (July) 1925; Chem. Abstr. **19**: 3097 (Oct. 20) 1925.

3. Deuel, H. J., Jr.: The Intermediary Metabolism of Fructose and Galactose, Physiol. Rev. **16**: 173 (April) 1936.

4. Maile, W. C. D., and Scott, K. J. L.: Further Observations on the "Digestibility" of Common Foodstuffs as Determined by Radiography, Lancet **1**: 1500 (June 29) 1935.

5. Cori, C. F.: The Fate of Sugar in the Animal Body: I. The Rate of Absorption of Hexoses and Pentoses from the Intestinal Tract, J. Biol. Chem. **66**: 691 (Dec.) 1925.

6. Folin, Otto, and Berglund, Hilding: Some New Observations and Interpretations with Reference to Transportation, Retention and Excretion of Carbohydrates, J. Biol. Chem. **51**: 213 (March) 1922.

7. Foster, G. L.: Studies on Carbohydrate Metabolism: I. Some Comparisons of Blood Sugar Concentrations in Venous and Finger Blood, J. Biol. Chem. **55**: 291 (Feb.) 1923.

rapidly from the intestinal tract, but whether it is more rapidly absorbed than other sugars is not entirely clear.

After it has been absorbed, dextrose is further converted by the normal person into glycogen and stored temporarily in the liver and muscle; it may be burned to yield ultimately carbon dioxide and water, with the production of heat and energy, or it may be transformed into fat and stored in the fat depots of the body. Under certain conditions some of it may even spill into the urine. The determination of the respiratory quotient has been used as a customary method of studying the relative rates of the oxidation of dextrose and other carbohydrates. This determination requires the measurement of the volume of carbon dioxide produced and the volume of oxygen consumed. The first figure divided by the second gives the value of the respiratory quotient. When dextrose is burned, the respiratory quotient is 1.0 because there are six molecules of carbon dioxide and six molecules of oxygen involved in the metabolism of one molecule of dextrose. When pure fat is burned, the respiratory quotient is about 0.70. It has been found that the respiratory quotient in the postabsorptive state is in the neighborhood of 0.80, which indicates that a mixture of fat and carbohydrate (and possibly protein) is being burned but that fat is the predominant fuel. If dextrose is given to a subject in this postabsorptive condition, the respiratory quotient is found to rise within sixty minutes to a value of about 0.90 to 0.95. When levulose is ingested, the respiratory quotient rises much more quickly; in about twenty minutes it has reached a value of 1.0. Figures above 1.0 also have been reported; these may be interpreted in at least two ways. High quotients, particularly those greater than unity, may mean that the carbohydrate is being converted into fat or it may mean that additional carbon dioxide is being eliminated because of a reduction in the bicarbonate content of the blood resulting from the formation of organic acids from the carbohydrate. Carpenter and Lee[8] attempted to overcome the latter objection by measuring what they call the alveolar respiratory quotient. With their technic they were able to corroborate the general observation that ingestion of levulose or sucrose is followed by a more rapid rise in the respiratory quotient than is observed after the ingestion of dextrose. The general conclusion is that levulose and sucrose are absorbed quickly (sucrose normally is converted first into levulose and dextrose) and oxidized quickly by the body. Studies of the respiratory quotient show that sucrose and levulose affect carbon dioxide production more quickly than does dextrose, but whether this means that these sugars are more rapidly absorbed and metabolized than dextrose is not clear.

Deuel[9] and his collaborators at the University of Southern California have made a number of interesting studies on the relative value of different carbohydrates in combating ketosis. Ketosis was produced usually by allowing the subjects to fast for several days or by the ingestion of high fat diets until the urine showed the presence of ketone bodies. Different carbohydrates were then administered and it was observed that galactose, levulose and sucrose were all superior to dextrose in combating the ketosis. They were also more effective than dextrose in causing a diminution in the amount of ketone bodies excreted in the urine and in reducing the urinary nitrogen excreted (the so-called nitrogen sparing action). Murlin and his collaborators[10] have recently reported somewhat different results. With dogs and human subjects they have found that the relative antiketogenic effect of different sugars varies with the method of producing ketosis, and even with the amount of sugar given.

As a result of the efforts of many physiologists and biochemists, a great deal has been learned about the fuel of muscular exercise. In a recent review Dill[11] concluded that the fuel of light exercise is whatever may be available at the time when the body demands an extra source of energy. For exhaustive work, however, carbohydrates are important. In 1924 Levine, Gordon and Derick[12] reported some interesting observations on the effect of feeding dextrose to marathon runners. They observed that the exhaustion of the runner—after running from 14 to 18 miles—was correlated with low blood sugar values and they suggested the use of carbohydrate meals before severe athletic contests. The following year, 1925, they[13] reported experiments in which they provided runners with dextrose candies to be eaten during a marathon race. They reported an improvement in the condition at the end of the race of the runners who had eaten dextrose. Dill[11] pointed out that, while the feeding of carbohydrate and especially dextrose to an individual before an athletic contest may be a rational procedure from the engineering point of view, it has not received favor among athletes. The general feeling is that man is an animal subject to digestive upsets and should not be treated like a steam engine into which fuel is shoveled. A suggestion made by certain manufacturers of candies containing dextrose, that ingestion of their products will improve the athletic ability of the young man who eats it immediately prior to his events, is certainly not justified by adequate evidence. An interesting experiment along related lines has been made by Haggard and Greenberg.[14] These workers investigated the muscular efficiency of university persons and employees of a factory who were engaged in individual tasks on a piece work basis. The Yale investigators found that the efficiency with which a given task was performed was greatest when the blood sugar was high and the respiratory quotient near unity. This condition they were able to secure and to maintain for a longer period during the day by having the subjects eat midmorning and midafternoon lunches. No studies of the effect of individual carbohydrates were made, and, in the opinion of the investigators, the beneficial results which they reported could be obtained by dividing the usual daily intake of food into five small meals instead of three large meals.

More recently Bøje[15] determined the blood sugar concentration as part of an investigation into the physiology of severe exercise. He found that subjects who had previously subsisted on a high fat diet develop hypoglycemic symptoms during extraordinarily severe work much sooner than they did when subsisting on a high carbohydrate diet. The blood sugar could be quickly brought up to normal levels and the symptoms relieved by the administration either of dextrose or of sucrose by mouth.

SUMMARY AND ALLOWABLE CLAIMS

Dextrose is a sugar found in many natural products or incorporated in different fabricated food mixtures. It is also being produced in pure form in large quantities. Its sweetness is about 75 per cent of that of sucrose. Dextrose should not be termed the physiologic sugar, for such designation permits the connotation that dextrose is a preferred food, which is not compatible with known facts. Although dextrose requires no hydrolytic changes in the alimentary tract to prepare it for absorption, it is incorrect to state that it is instantly absorbed. Dextrose is well utilized as a food, but it possesses no practical advantages over many other carbohydrates in combating ketosis produced by either a high fat diet or by fasting, nor does dextrose itself have unique advantages when administered by mouth to prevent or relieve fatigue or to maintain muscular efficiency to a high degree. Dextrose is produced by the digestion of the most important dietary carbohydrate, starch. The evidence which indicates any superiority, under normal conditions, of dextrose ingested as the free sugar over dextrose ingested as the polysaccharide starch is not convincing.

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9. Deuel, H. J., Jr.; Gulick, Margaret, and Butts, J. S.: Studies on Ketosis: II. The Comparative Ketolytic Action of Glucose, Galactose, Fructose and Sucrose, J. Biol. Chem. **98**:333 (Oct.) 1932.

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14. Haggard, H. W., and Greenberg, L. A.: Diet and Physical Efficiency: The Influence of Frequency of Meals upon Physical Efficiency and Industrial Productivity, New Haven, Yale University Press, 1935.

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SATURDAY, FEBRUARY 13, 1937

HOSPITAL AIR CONDITIONING

Complete air conditioning of a hospital would seem to involve large capital expenditures, depreciation and running expense which do not seem justified by the facts now known. Yaglou [1] has recently discussed in detail the problem of air conditioning as it applies to hospitals. At present it concerns principally nurseries for premature infants, anesthesia and operating rooms, oxygen therapy chambers, heat therapy rooms or cabinets and wards for allergic patients. The optimal air conditions, he says, for the growth and development of premature infants have been determined by using four valid criteria; namely, stability of body temperature, gain in weight, incidence of digestive syndromes and mortality. Comparative observations of premature infants in conditioned and unconditioned wards demonstrated conclusively the favorable effect of conditioning on stabilization of body temperature. The favorable effect apparently resulted from better control of temperature, superior ventilation methods, suitable provision for cooling the room in warm weather and the comparatively high humidity that prevailed. The optimal conditions for minimizing initial loss of body weight and shortening the period of recovery were obtained in conditioned nurseries with high relative humidity. Similarly, maximum gain in body weight after the first week of life occurred in the conditioned nurseries under high humidity in infants weighing less than five pounds. The incidence and severity of digestive syndromes with diarrhea, persistent vomiting, diminishing gains or loss of body weight and other untoward symptoms were generally twice as high under low than under high humidity. Finally, the mortality of premature infants was found to be greatly affected by humidity, achieving its lowest rate in conditioned nurseries under a high humidity of 65 per cent or more.

Air conditioning in operating rooms is mainly concerned with the welfare of the patient, the comfort and efficiency of the surgeon and his personnel and the safety of the whole procedure. There is complete unanimity among all workers as to the effectiveness of high humidity on the prevention of accumulation of static; this is therefore an important measure of safety where explosive gases are used. The problem of operating room temperature is a difficult one and not much is known concerning the optimal air conditions necessary to maintain a normal body temperature under the influence of anesthesia and during the immediate postoperative period. What evidence there is, however, points to the desirability of maintaining reasonably cool conditions in the operating room for both patient and operating personnel.

There is a real advantage, the author believes, in the oxygen chamber over the oxygen tent when this method of therapy is indicated. A patient in a chamber receives unhampered medical and nursing care, and the oxygen concentration, the temperature and the humidity can be adequately controlled at any desired level. The chief disadvantages are high initial and operating costs. Since the temperature and humidity requirements in oxygen therapy depend primarily on the physical condition of the patient and secondarily on the type of disease, the ease of varying these factors in oxygen chambers is a matter of considerable import. In pneumonia, for example, the range of satisfactory temperatures and humidity is placed between 60 and 75 F., with from 20 to 50 per cent relative humidity. In this disease the consensus seems to favor a low humidity. While the criteria for air conditioning in fever therapy are not yet definitely established, the author expresses the opinion that water saturated or nearly saturated air of comparatively low temperature would probably prove more suitable for the production and maintenance of fever when used as therapy than the hot dry air now employed in some machines.

The use of air conditioned wards in the treatment of many allergic disorders has found considerable vogue. There is evidence that thermal factors are important in the precipitation of allergic attacks. Many factors appear to precipitate attacks, but the most potent appears to be a sudden temperature change, which may be practically eliminated by air conditioning. There are also many persons who cannot be effectively desensitized to allergens but who can obtain varying degrees of relief from filtration of air borne antigens. It appears, in fact, that the chief remedial factor in the treatment by conditioned air is the filtration of pollen. This effect can be obtained sometimes by simple filtration without air cooling. However, comfortable temperatures between 75 and 82 F. in warm weather and a relative humidity well below 50 per cent appear to be beneficial and desirable.

Enough preliminary work has now been done apparently to indicate the lines along which air conditioning should be introduced into hospitals. Before embarking on any program of air conditioning, Yaglou's report deserves the careful study of all those hospitals now or soon to be in a position to install additional equipment.

1. Yaglou, C. P.: Hospital Air Conditioning, J. Indust. Hyg. & Toxicol. 18:741 (Dec.) 1936.

THE RISE OF MEDICAL JOURNALISM

In a series of articles[1] in current issues of the London *Lancet* a chronicler traces the rise of medical journalism from the earliest times to the present. He suggests that medical journalism began with the votive offerings found in the temples of Aesculapius; these were essentially clinical notes and were thus the starting point of medical literature.

In the period called the Dark Ages the publication of medical material lapsed, although industrious scribes kept medicine alive through their records, which were stored away in the monasteries. Apparently the first definite medical journal to be published in Great Britain was the *Foreign Medical Review*, which ran for ten years at the end of the eighteenth century. That publication had slight support. It was based largely on materials published on the continent of Europe, which were abstracted. Then in 1781 the *London Medical Journal* was established, which also was devoted to extracts from foreign material. Other periodicals appeared at fairly frequent intervals until in 1823 the London *Lancet* made its first appearance. With this publication medical journalism assumed a new shape. The immediate popularity of the *Lancet* was apparently due to the fact that it became a voice for the profession and at the same time supplied the physician with medical information. Its first editor, Thomas Wakley, did what he could to publish exact reports of the lectures given in the hospitals and records of the cases presented. Lecturers in the clinics who were accustomed to being paid for what they had to say objected to this pirating of their material and its dissemination in a periodical. A polemic discussion resulted with a fine calling of names and an exchange of scurrilous insinuations. The scurrility was, of course, in the nature of the times.

In this series of articles the author next considers modern attempts to develop medical information in a manner suitable for a public audience. In Great Britain the General Medical Council has warned physicians that they "should not append their signatures to descriptions of treatment as, in the by and large, the advice given could not be generally useful. Not to accept this warning is to run the grave risk of professional status." Fortunately the admonition is administered by the General Medical Council with a considerable amount of discretion. As every one knows, it is easily determinable from reading an article or interview in the lay press whether it is justifiable or essentially a means of advertisement of its writer.

The writer of these interesting observations in the London *Lancet* is convinced that the thread of medical journalism is unbroken from the time of Hammurabi to the days of the motor car, and he has found the tracing of that thread a fascinating avocation. There is yet not available in any one place a comprehensive history of medical journalism with a real analysis of its effects on the trends of medical thought, on the advancement of medical science or even on the dissemination of medical knowledge. In a recent conference of the editors of the various state medical journals a considerable portion of one evening was given over to a discussion as to the extent to which the editor of a medical periodical might exert leadership in medical affairs. A review of the history of medical publications indicates that in the case of Wakley at least, and quite certainly in the case of an editor with the record of Dr. George H. Simmons, it becomes possible for those who mold medical thought to exercise leadership in no indefinite manner. Those who bear the responsibility for the issuing of medical publications may well realize the great responsibility which is theirs, particularly in times of active evolution.

1. Grains and Scruples, Lancet 2:1358 (Dec. 5), 1422 (Dec. 12), 1485 (Dec. 19), 1542 (Dec. 26) 1936.

WHAT HAPPENS TO STUDENTS OF TWO YEAR MEDICAL SCHOOLS

Among our medical educational facilities are some schools, located for the most part in small communities, without clinical facilities, which offer only the first two years of the medical curriculum consisting of the preclinical sciences. It is frequently asserted that such schools are needed in their respective states to provide an opportunity, not otherwise procurable, for the boys and girls resident in these states to undertake the study of medicine. It is claimed also that those who have attended these schools will return after graduation to practice in the states in which their medical career was begun.

To test the validity of such statements, an analysis has been made of the birthplace and present location of all students who entered these incomplete schools in the years 1925-1928. These classes were chosen because all of them have had at least four years since graduation in which to complete their internship and to become established in practice. In table 1 will be found, for each of the ten schools in the United States, the total number of students entering the first year class under the years under consideration, and the percentage who were born within, or outside of, the state in which the school is located. In one half of the schools more than a third, and in seven tenths more than a fourth of the students came from outside the state.

TABLE 1.—*Birthplace of Students*

School	Number Admitted	Per Cent Born In the State	Per Cent Born Out of State
A	215	55	45
B	78	5	95
C	141	89	11
D	169	73	27
E	106	89	11
F	114	59	40
G	107	40	60
H	114	73	27
I	113	84	16
J	254	53	47

In the second table is shown for the same classes the number who graduated from a class A school and the percentage of these graduates now known to be practicing within and out of the state. From all the schools more than 25 per cent are found to be practicing outside the state and of six schools more than half of those graduated are known to be practicing outside the state.

In a school with a small student body, satisfactory educational standards can be maintained only with a large expenditure for each student. So far as the state supported schools are concerned, better results could be obtained for less cost if a certain number of scholarships were annually provided open to bona fide residents of the state on a competitive basis. If thought necesary, it might even be stipulated that those to whom scholarships were awarded would return to practice within the state for at least three years.

TABLE 2.—*Where Graduates Are Practicing*

School	Graduated from Class A Schools	Per Cent Practicing in the State	Per Cent Practicing Out of State
A	163	31	69
B	71	10	76
C	118	49	48
D	128	47	41
E	156	56	31
F	97	24	64
G	80	19	77
H	104	34	58
I	100	53	32
J	202	36	53

SURVEY OF CHRONIC DISEASES

Results will apparently soon be available in the survey of chronic diseases inaugurated by the United States Public Health Service Oct. 1, 1935.[1] Field work of the survey was closed June 30, 1936. October 1 recording and card punching of the data gathered were about 50 per cent complete for the inventory as a whole. The chronic and disabling illness study comprises 867,000 family schedules, representing some three million persons. It covers a population from a third larger to a hundred times larger than that reported in previous surveys of comparable character. Among the previous surveys are the health and depression studies made by the U. S. Public Health Service in 1931 and 1933, covering 6,686 families and 28,959 persons. The study by the Committee on the Costs of Medical Care covered only 8,758 families representing 39,183 persons, and a similar survey by the Metropolitan Life Insurance Company in 1915 covered 637,038 policyholders and their families.

The survey of chronic diseases was conducted with the help of Works Progress Administration relief workers centering around a central office in Detroit. Approximately 1,300 persons are now at work on this survey. The first steps were house-to-house enumeration. The field work of the survey was completed in April 1936 and was rapidly followed by completion of other related surveys such as communicable disease study, occupational morbidity and mortality study, the hearing survey and health facilities survey. The states included in the inventory had spent within their territory $2,200,000 for enumeration activity, employing as high as 5,000 relief workers at one time.

The survey was conducted by asking persons in their homes about the presence of various health conditions, particularly chronic diseases. No diagnosis from a lay person was accepted and the lay enumerators were instructed to make no attempt at diagnosis. They simply enumerated the statements made to them. These were referred to physicians, who were asked to confirm the diagnosis. This question had been discussed previously with representatives of the American Medical Association and between an assistant surgeon general and the American Medical Association Board of Trustees. It was felt that many physicians might decline to give this information. It appears from the report of the survey now published that in most instances physicians with the permission of their patients confirmed the diagnosis or gave such information as resulted in correction of erroneous impressions which might have been gathered from a survey without medical confirmation.

The study is now in the punch card and sorting stage, but it is expected that before long there will be material ready for publication. The city that has been selected for early completion of the study is Grand Rapids, Mich. As these studies are published they will undoubtedly be of great interest to physicians who have contributed so liberally of their cooperation to make this study possible. The great care exercised in the preliminary preparations for this study and the high degree of public and medical cooperation that seems to have been achieved lend color to the hope that this first great and comprehensive study of disease conditions in the United States will be as accurate as it is comprehensive.

1. Health Officer 1:333 (Jan.) 1937.

Current Comment

INSULIN SHOCK TREATMENT FOR SCHIZOPHRENIA

The amazing results already reported in some cases in which the insulin shock treatment has been applied in schizophrenia have resulted naturally in a certain amount of premature enthusiasm in relationship to the use of the method. It has been widely exploited in the press with the statement that it constitutes a cure for what has formerly been considered an incurable disease. As a result, the Committee on Public Education of the American Psychiatric Association has considered it worth while to issue a public statement on the present status of this new method. The statement comes with the approval of all the members of the

committee [1] and also of the president of the American Psychiatric Association, Dr. C. Macfie Campbell, professor of psychiatry in Harvard University. "The impression that there never has been and is now," says the statement, "no treatment for dementia praecox, except through insulin therapy, is entirely erroneous. While dementia praecox has a less favorable outlook than many other forms of mental illness, much has been done and there are many forms of therapy each promising something. It is hoped, and may prove to be a fact, that the so-called insulin shock treatment for dementia praecox will find a useful place among the forms of treatment for dementia praecox, but its exact value has yet to be determined and it can be definitely stated that it is not a specific, nor by any means a cure for all cases of dementia praecox. It would be a source of regret should the insulin shock treatment be a means of holding out a false hope to the families of the tens of thousands of sufferers from dementia praecox when this hope most certainly cannot be widely realized with present day knowledge of insulin therapy. It is, however, at the present time receiving careful study in the New York and Massachusetts State Hospital systems, Bellevue Hospital, New York, and other scientific centers, but it should not be undertaken except by those adequately trained to meet the dangers connected with the treatment."

SYPHILIS IN A LARGE INDUSTRIAL ORGANIZATION

In a report on the incidence of syphilis in an industrial organization employing more than 36,800 persons, the Kahn precipitation test was used for diagnostic purposes. All new employees, according to Gehrmann,[1] and as many of the old employees as would voluntarily submit to the test, were examined by this means. Of the total 36,794 examined, 1,488, or about 4 per cent, were found positive. Positive results were checked with a second test in the central laboratory of the corporation and by Wassermann and Kahn tests done by an independent laboratory. With occasional exceptions it was the policy of the company to keep the results confidential between the central laboratory and the employee. Each employee with a positive reaction was carefully instructed concerning the nature of his condition and referred for treatment either to his physician or to a free clinic. Furthermore, each case was followed persistently by the staff of the medical division to insure adequate treatment. This follow-up information resulted in several expected and several surprising conclusions. Few of the employees with positive reactions refused to be treated. Some physicians, it is reported, attempted to charge fees that were not commensurate with the ability of the employee to handle. Physicians sometimes refused to treat the referred patients in spite of the positive test. In some instances when the attending physician sent another blood specimen to a private or state laboratory and a negative report was returned the correctness of the diagnosis was denied. Many of the patients were discharged with insufficient treatment. A few patients were treated with pills alone. Although treatment at the free clinics was satisfactory, it was not always possible for the employees to conform to clinic hours and in some instances the clinics would not treat any patient who was employed. This study demonstrates the relatively high incidence of syphilis in at least one industry and the need for routine serologic examination. Furthermore, it is apparent that the cooperation of individual physicians in the treatment of syphilis should be improved if progress is to be made in combating the condition successfully.

1. Members of the committee include Dr. C. C. Burlingame, clinical professor of psychiatry at Yale University and psychiatrist in chief at the Neuropsychiatric Institute of the Hartford Retreat; Dr. Adolf Meyer, professor of psychiatry at Johns Hopkins University and director of the Phipps Clinic, Baltimore; Dr. William A. White, professor of psychiatry at George Washington University and superintendent, St. Elizabeth's Hospital, Washington, D. C.; Dr. Oscar Raeder, professor of psychiatry at Boston University and chief of the outpatient department of Boston Psychopathic Hospital, and Dr. Karl Bowman, professor of psychiatry at New York University and director of Bellevue Hospital.

1. Gehrmann, G. H.: Syphilis in a Large Industrial Organization, Pub. Health Rep. 2**7**1:227 (Aug.) 1936.

MEDICAL ORGANIZATION AND SOCIAL SECURITY LEGISLATION

From time to time the Secretary of the American Medical Association has pointed out the importance of a completely united and well organized medical profession for the securing of proper medical representation. It is interesting to read in a recent review on "The Influence of the Association on Legislation" [1] a report of the extent to which the British Medical Association was able to influence considerations in that country of the National Health Insurance Bill. The consideration serves no less to establish the situation that confronted Great Britain at the time when the National Health Insurance Bill was first proposed in 1911. The review says:

> The *cause célèbre* of the Association's Parliamentary work is, perhaps, the fight over the National Health Insurance Bill in 1911. Although the history of this conflict is well known, at least in its main outlines, its influence on the future of the profession was so vital and profound that it is well to reflect occasionally upon the full significance of the Association's success, and upon the degree of concerted action among medical practitioners that it was necessary for the Association to secure in order that the profession might achieve its victory.
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> It will be remembered that the Government did not consult the medical profession during the early stages of the preparation of the scheme; that the original proposals placed the control of medical benefit, including the appointment of doctors, in the hands of approved societies; and that no provision was made for the representation of the profession on any of the bodies entrusted with the administration of the system. Immediately after the introduction of the Bill the Association formulated its policy in its "Six Cardinal Points," which included free choice of doctor and patient, the administration of medical and maternity benefits by Insurance Committees, and the investment of medical committees with the control of professional discipline. The Association then began an intensive campaign to awaken the profession to the danger that threatened its independence. The response was immediate and whole-hearted, and the Association, supported by the signatures of 26,000 practitioners to a pledge to refuse service under the national health insurance scheme except on terms which accorded with its declared policy, and by the formal resignations of 33,000 doctors holding contract appointments with friendly societies, gained most of its points during the protracted negotiations with the Government.
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> The Association's achievement was of the highest importance to its own status and to the future of the profession. During the fight its authority was undisputed, and its firm refusal to allow any lay body to take part in the arrangement of professional terms of service has ensured to the profession direct access to Government authorities whenever negotiations on medical matters are needed. Medical practitioners themselves

1. The Influence of the Association on Legislation, Brit. M. J. Supplement, Jan. 23, 1937, p. 42.

were saved from subservience to the approved societies, and the intrusion into insurance practice of the evils of the old forms of contract practice was prevented. These results have been very far-reaching in their influence, for national health insurance practice not only affects a large proportion of the population but also sets the standard for other forms of contract practice.

The quotation here cited is not offered as an endorsement of the British system of health insurance. It is cited rather as an indication of the manner in which a united medical profession may express its wish to governmental authorities and legislative bodies. From present indications the medical profession in this country will, if necessity warrants, express its views with even greater unanimity than did our British confrères.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Two Day Graduate Course.—The Arkansas Medical Society held its second two day course of graduate instruction at the University of Arkansas School of Medicine, Little Rock, January 13-14. Guest speakers included:

Dr. Walter C. Alvarez, Rochester, Minn., Treatment of Diseases of the Digestive System.
Dr. Curtice Rosser, professor of proctology, Baylor University College of Medicine, Dallas, Texas, Diagnosis and Management of Common Rectal-Anal Conditions.
Dr. Urban Maes, professor of surgery, Louisiana State University Medical Center, New Orleans, Symptoms, Diagnosis and Treatment of Gallbladder Diseases.

Bills Introduced.—S. 120 proposes that the state accept an offer from the city of Little Rock to convey to the state the Little Rock City Hospital, which hereafter is to be known as the Arkansas State Charity Hospital and is to provide free hospitalization and medical treatment for the indigent sick of the state. H. 248 proposes to prohibit the cultivation, preparation, possession or distribution of marihuana. The bill proposes, however, that it shall not be unlawful for any licensed pharmacist to possess marihuana for sale on the written prescription of a physician, osteopathic surgeon, dentist or veterinarian.

CALIFORNIA

Bills Introduced.—S. 291 proposes, in the event a business and professions code is enacted by the fifty-second legislature, to repeal the act to prevent blindness from ophthalmia neonatorum, approved June 11, 1915, and to enact in its stead as article 3, chapter 1, division II, of the proposed business and professions code an article proposing to make it the duty of any physician, midwife, nurse, maternity home or hospital, and any person or persons attendant on or assisting at childbirth in all cases in which the child develops ophthalmia neonatorum within two weeks after its birth, to report the case within twenty-four hours after knowledge to the appropriate local health officer. Senate Constitutional Amendment No. 5 proposes to authorize the governing body of any city, county or city and county (1) to establish a general hospital for the treatment of both indigents and persons able to pay and (2) to adopt rules and regulations, among other things, with respect to the rate or fees to be charged nonindigent patients. S. 314 proposes to authorize the superintendent of schools of each county to employ one or more nurses to supervise the health of pupils enrolled in the elementary schools and to perform such duties as may be prescribed by the county superintendent of schools. A. 871 proposes to exempt from the provisions of the state sales tax "the gross receipts from the sale of drugs of all kinds and character." A. 880 proposes to establish a business and professions code and to consolidate and revise the law regulating, among other things, the licensed professions and callings. The bill proposes to create a department of professional and vocational standards to be composed of the board of dental examiners, the board of medical examiners, the state board of optometry, the state board of pharmacy, the board of examiners in veterinary medicine, and the board of accountancy. Each of the boards comprising the department is to exist as a separate unit and is to set standards, hold meetings and set dates thereof, prepare and conduct examinations, pass on applicants, conduct investigations of violations of laws under its jurisdiction, issue citations and hold hearings for the revocation of licenses, and impose penalties following such hearings. The department is to have possession and control of records, books, papers, offices, equipment, supplies, funds, appropriations, land and other property now or hereafter held for the benefit or use of any of the bodies comprising the department. The bill proposes to prohibit various designated types of frauds of medical records and to prohibit certain types of advertising, such as advertising with respect to venereal diseases, lost manhood, impotence, seminal emissions, self abuse, or medicine or means for producing or facilitating a miscarriage or abortion, or for the prevention of conception. A. 937 proposes to permit nonprofit corporations to establish, maintain and operate nonprofit hospital service plans whereby hospital care is to be provided by said corporations to such of the public as become subscribers. No corporation is to be permitted to operate a nonprofit hospital service plan until it has procured the written consent of the commissioner of insurance. Apparently, corporations operating a hospital service plan on a profit basis or which, though operating such a plan on a nonprofit basis, conduct any business whatsoever on a profit basis are not to be able to qualify under this act. A. 1009 proposes to make it unlawful for any person to own, possess or operate any x-ray device or x-ray laboratory unless such device or such laboratory is operated under the direct supervision of a person licensed by the state board of health. Apparently only licentiates of the board of medical examiners, licensed osteopaths and licensed dentists are to be eligible for licensure by the board of health. However, nothing in the bill is to be construed to prohibit "the ownership, possession, maintenance or operation of x-ray devices used only as an incident to the lawful diagnosis or lawful treatment of persons by duly licensed physicians and surgeons, osteopaths, drugless practitioners, or dentists by means other than x-rays or x-ray devices or the taking of spinographs by duly licensed practitioners of chiropractic."

COLORADO

WPA Research Laboratory.—In the news item describing a tuberculosis research laboratory recently built in Colorado Springs, appearing in THE JOURNAL, Dec. 26, 1936, page 2137, the letters PWA were inadvertently used instead of WPA.

Society News.—Dr. Jonas Curtis Lyter, St. Louis, discussed angina pectoris before a special meeting of the Medical Society of the City and County of Denver December 14.——Dr. Henry A. Buchtel, Rochester, Minn., discussed "The Use of Mandelic Acid" before the Pueblo County Medical Society in Pueblo, January 19.——Dr. Omer R. Gillett presented a paper before the El Paso County Medical Society, Colorado Springs, January 13, entitled "Some Sewage Problems Which May Be Related to Public Health."——At a meeting of the Northeast Colorado Medical Society in Sterling, January 15, Dr. Thad P. Sears, Denver, discussed arthritis.——The Crowley County Medical Society was addressed in Olney Springs, January 2, by Drs. George B. Stanley and William M. Desmond, both of Ordway, on "Streptococcic Infection of the Throat" and "Treatment of Influenza and Pneumonia" respectively.

CONNECTICUT

Library Named in Honor of Dr. Steiner.—The library of the Hartford Medical Society has been named the Walter R. Steiner Medical Library in honor of Dr. Steiner, librarian since 1903. The change was made at a meeting January 4. A native of Maryland, Dr. Steiner graduated from Johns Hopkins University School of Medicine in 1898. He was president of the Medical Library Association from 1931 to 1933; secretary of the Connecticut State Medical Society from 1905 to 1912, chairman of its council, 1929-1933, and president, 1934-1935. He was president of the Hartford Medical Society in 1929 and of the American Clinical and Climatological Association, 1934-1935. Except for the sessions of 1926 and 1928, Dr. Steiner has been a member of the House of Delegates of the American Medical Association since 1919. The library of the Hartford Medical Society was begun sixty-two years ago and consists of about 20,000 volumes.

Bills Introduced.—H. 139 proposes to prohibit the sale, for household use, of any caustic potash, caustic soda or lye, oxalic acid or salt thereof, or any ammonia water in concentration of 5 per cent or more unless the container as retailed bears the word "poison" and a "statement instructing as to

treatment in case of accidental swallowing of or injury by such chemical." H. 17 proposes to forbid a licensed physician to disclose any information of a confidential character which he may have acquired in attending any patient in a professional capacity and which was necessary for him to serve the patient professionally. H. 329, to amend the state pure food and drug act, proposes that the term "drug," as used in that act, "shall include all medicines and preparations recognized in the United States Pharmacopeia or National Formulary for internal or external medicinal use, any substance or mixture of substances intended to be used for the cure, mitigation or prevention of disease of either man or animals, and any substance or mixture of substances of an antiseptic, tonic or toilet nature for internal or external use."

DISTRICT OF COLUMBIA

Medical Bills in Congress.—*Change in Status:* H. R. 4113 has been reported to the House, proposing to issue a license to practice the healing art in the District of Columbia to Dr. Ralph Charles Stuart. *Bills Introduced:* S. 1224, introduced by Senator King, Utah, proposes to amend the optometry practice act in the District of Columbia so as to permit any individual, firm, partnership or corporation to maintain an optometric department in a mercantile establishment when such department is under the supervision, direction and management of a regularly licensed and registered optometrist. S. 1225, introduced by Senator King, Utah, proposes to provide for lunacy proceedings in the District of Columbia. H. R. 3891, introduced by Representative Quinn, Pennsylvania, proposes to regulate the practice of cosmetology in the District of Columbia. The word "cosmetology" is defined in the act to mean "any one or any combination of practices generally and usually, heretofore and hereafter, performed by, and known as the occupation of, beauty culturists, or cosmeticians, or cosmetologists, or hairdressers, or of any other person holding him or herself out as practicing cosmetology by whatever designation and within the meaning of this Act and in and upon whatever place or premises; and in particular 'cosmetology' shall be defined and shall include, but otherwise not be limited thereby, the following or any one or a combination of practices, to wit: arranging, dressing, styling, curling, waving, cleansing, cutting, singeing, bleaching, coloring, or similar work, upon the hair of any female person by any means, and with hands or mechanical or electrical apparatus or appliances, or by the use of cosmetic preparations, antiseptics, tonics, lotions, or creams, massaging, cleansing, stimulating, manipulating, exercising, beautifying, or similar work, the scalp, face, neck, arms, bust, or upper part of the body, or manicuring the nails of any person."

GEORGIA

Personal.—Dr. Charles W. Reid, Pelham, has recently completed fifty years in the practice of medicine.——Dr. Thomas F. Abercrombie, director, state department of health, was awarded the honorary degree of doctor of science during the centennial celebration of Emory University, December 12.——Dr. Rufus F. Payne, Lebanon, Tenn., has been appointed health officer of Tift County; he formerly served in a similar capacity in Walker County.

Bills Introduced.—H. 84 proposes to authorize the board of regents of the university system of Georgia to establish and maintain in the University of Georgia, located at Augusta, a department for instruction in dental sciences and related subjects. H. 36 and S. 37 propose to grant to physicians, drugless practitioners, dentists, nurses and hospitals treating persons injured through the negligence of another, liens on any claims, moneys or things of value accruing to the injured persons because of their injuries. H. 78 proposes to authorize the department of public health to establish a standard for the organization, equipment and conduct of cancer units or departments in general hospitals in the state, to provide a plan for the care and treatment of indigent persons suffering from cancer, and to acquire such laboratories, hospitals or other property as is necessary to carry out the purpose of the act. The bill proposes to appropriate $100,000 annually to enable the department of public health to carry out the provisions of the act. H. 179 proposes that a "regular physician or surgeon" shall not, without the consent of his patient, be examined in any civil action as to any information, or opinion based thereon, acquired in attending the patient, which was necessary to enable him to prescribe or act for the patient. S. Res. No. 9 proposes an amendment to the constitution to permit the general assembly to delegate to any county the right to levy a tax for the purpose of furnishing medical care and hospitalization for the indigent sick of the county.

ILLINOIS

Typhoid Carriers.—Fifty-four new typhoid carriers were detected in Illinois during 1936. This brings the number of carriers under state supervision to 162, according to the Illinois Department of Health.

Chicago

Hospital News.—The dedication of the new $200,000 annex to the St. Francis Hospital will take place in May. Work was started last July. The present building of the hospital was constructed in 1923.——St. Elizabeth Hospital celebrated the fiftieth anniversary of its founding, Nov. 14-16, 1936.

Society News.—Dr. Frances A. Ford, Detroit, addressed the Chicago Council of Medical Women, February 5, on "The Contact of the Average Physician with the Problem of Cancer."——Dr. Alfred Adler of Vienna gave a lecture January 24, on "The Meaning of Neurosis." The lecture was under the auspices of the Chicago Association for the Study and Advancement of Individual Psychology.

Personal.—John McKinlay was elected president of the Presbyterian Hospital Association at its annual meeting, January 20, succeeding Alfred T. Carton, who resigned.——Dr. Harold J. Noyes, clinical associate of pediatrics, Rush Medical College, addressed the Cleveland Dental Society, February 1, on "Modern Dental Contributions to Medical Diagnosis." Dr. Noyes also has a degree in dentistry.——Dr. Anna M. Braunwarth observed her eightieth birthday January 11; she has completed fifty years in the practice of medicine.

INDIANA

Bill Introduced.—H. 169 proposes to enact a "workmen's occupational disease act" and to make compensable any disablement arising from any occupational disease arising out of and in the course of the employment. The term "occupational disease" is defined to mean a disease arising out of and in the course of employment. A disease is to be deemed to arise out of the employment only if there is apparent to the rational mind, on consideration of all the circumstances, a direct causal connection between the conditions under which the work is performed and the occupational disease; if it can be seen to have followed as a natural incident of the work as a result of the exposure occasioned by the nature of the employment; if it can be fairly traced to the employment as the approximate cause, and if it does not come from the hazard to which workmen would have been equally exposed outside of the employment.

IOWA

Personal.—Dr. Harold T. Werner has resigned as head of the Santa Fe Hospital, Fort Madison, and has moved to Paducah, Ky., where he will engage in practice.

Bill Introduced.—H. 59, to amend the chiropractic practice act, proposes to authorize the board of chiropractic examiners to license chiropractors to practice physical therapy provided such licentiates have pursued a course of training of at least 200 school hours in physical therapy in some recognized institution and shall pass an examination in physical therapy to be given by the board. The bill proposes also to permit chiropractors to practice in all state and public institutions and hospitals supported by public taxation and to permit chiropractors to examine applicants, to recommend admissions and releases, and make reports in connection with the admission of patients to all state or other public institutions.

KANSAS

Bill Introduced.—S. 116 proposes to authorize the establishment and maintenance of a state pneumoconiosis and tuberculosis sanatorium in Cherokee County and to appropriate $300,000 for the fiscal years ending June 30, 1937, and June 30, 1938, for the erection, equipment and maintenance of the sanatorium.

MASSACHUSETTS

Dr. Strong Lectures in London.—Dr. Richard P. Strong, professor of tropical medicine, Harvard Medical School, Boston, delivered the first Chadwick Lecture of the Royal Society of Tropical Medicine and Hygiene, London, January 21. His subject was "Onchocerciasis in Central America and Africa." Dr. Strong was recently elected an honorary fellow of the society.

Dr. Smillie Goes to Cornell.—Dr. Wilson G. Smillie, professor of public health administration at Harvard School of Public Health since 1927, has been chosen professor of public

health and preventive medicine and head of the department at Cornell University Medical College, New York. According to the New York *Times*, Dr. Smillie will represent Cornell in his new post in supervision of the health center in Kipps Bay, Yorkville, now being erected in cooperation with the New York City Department of Health. A native of Eaton, Colo., Dr. Smillie is 50 years of age. He graduated from Harvard University Medical School in 1912 and was an instructor from 1914 to 1916. He served as a staff member of the International Health Board of the Rockefeller Foundation from 1917 to 1927. Lent by the latter, he was director of the Instituto de Hygiene, São Paulo, Brazil, from 1919 to 1921. Dr. Smillie is the author of "Public Health Administration in the United States."

Bills Introduced.—H. 1448, to amend the workmen's compensation act, proposes, in effect, apparently to deprive an injured worker of the right to select his own physician for the treatment of his industrial injuries. Specifically, the bill provides: "If the insurer provides a physician he shall forthwith notify the injured person's family doctor or other physician selected by the employee, which physician shall then be entitled to assume charge of the case, and the reasonable cost of said physician's services shall be paid by the insurer." H. 721 proposes that in proceedings to commit a person to an institution for the insane that person shall have the right, at his own expense, to be examined at reasonable times by physicians of his choice for the purpose of giving evidence at such hearing on the question of his mental condition. H. 791 proposes to create a commission, to consist of one member of the senate, three members of the house of representatives, and three persons to be appointed by the governor, to investigate and study (1) a method whereby medical and surgical services may be available to the indigent, to those who because of limited resources are unable unaided to meet the cost of serious illness and to those living in remote districts and where adequate medical services are not obtainable, and (2) the subject of medical education particularly in regard to discrimination as to the number of members of various racial groups permitted to study medicine, whether or not a fair opportunity to study in tax exempt hospitals is afforded to all properly qualified medical students, the advisability of establishing a grievance board to which an appeal may be made from dismissals of students in tax exempt medical schools and the relation between the American Medical Association and tax exempt medical schools with respect to medical education. This commission is to report the results of its investigation and its recommendations to the general court, together with drafts of suggested legislation, not later than the first Wednesday of December 1937. H. 892 proposes to require both parties to a prospective marriage, as a condition precedent to the obtaining of a license to wed, to present to the official authorized to issue a marriage license a statement, signed by a licensed physician, that neither party is infected with syphilis. The physician's statement must be accompanied by a record of a standard laboratory blood test made not more than forty days before the issuance of the marriage license. H. 1200, Appendix III, proposes to authorize the department of public health to supervise all bacteriological and clinical laboratories, to make the necessary rules for their regulation and conduct, and, in effect, to license such laboratories. The bill proposes to define a "bacteriological laboratory" as a place or establishment which is maintained "in whole or in part for the purpose of accepting for and subjecting to bacteriological study or analysis specimens of blood, sputum, urine, feces, or other fluids, secretions or excretions of the body of persons ill or suspected of being ill with a disease dangerous to the public health." "Clinical laboratory" is defined as a place or establishment maintained "for the purpose of accepting and subjecting to chemical, physical, biological or bacteriological study or analysis specimens of blood, sputum, urine, feces, or other fluids, secretions or excretions from the living body of persons not residing therein or in an institution of which said laboratory is an integral part." Nothing in the bill is to be construed to require a physician or a dentist, maintaining a laboratory personally or with the aid of paid assistants for the sole purpose of performing tests from specimens obtained from patients under the direct personal care of said physician or dentist, to be licensed by the department. H. 1200, Appendix 40, proposes to require a physician having charge at the birth of an infant born prematurely, other than in a hospital or institution equipped to care for such infants, and weighing less than five pounds, to notify the board of health of the city or town in which the infant was born within twenty-four hours after birth. The board of health on receiving notification must forthwith provide for the transportation of such infant to a hospital equipped to care for prematurely born infants unless in the opinion of the attending physician such removal is deemed inadvisable.

MICHIGAN

Bill Introduced.—S. 60 proposes to grant to governmental hospitals and hospitals supported in whole or in part by private charity which have treated persons injured through the negligence of others, liens on all rights of action, suits, claims, counterclaims or demands accruing to the injured persons by reason of their injuries.

Hospital News.—The Interne Alumnae Association of Providence Hospital, Detroit, held its first annual winter clinic, January 5-9, at the Providence Hospital Nurses' Home. Dr. Walter Schiller of the University of Vienna was the guest lecturer.——The new McArthur Strange Hospital, Mount Pleasant, was opened recently.

Scholarship in Honor of Dr. Parker.—A scholarship will be established at the University of Michigan in honor of Dr. Walter R. Parker, emeritus professor of ophthalmology at the university's medical school, Ann Arbor. Funds will be provided through a gift of $30,000 to the university under the will of the late Mrs. Parker. Dr. Parker, who still practices in Detroit, graduated from the University of Pennsylvania School of Medicine in 1891.

MINNESOTA

Committee on Syphilis Control.—The council of the Minnesota State Medical Association has authorized the appointment of a committee on syphilis control. Dr. Samuel E. Sweitzer, Minneapolis, will be chairman.

Bills Introduced.—H. 401 and S. 433, to amend the workmen's compensation act, propose to add to the list of compensable occupational diseases, carbon monoxide gas poisoning. H. 442 proposes to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what appears to be the uniform narcotic drug act.

Imprisoned for Illegal Operation.—Ethel Planque, also known as Ethel Benson, 52 years of age, was sentenced Dec. 21, 1936, by Judge Frank E. Reed, in the district court of Hennepin County, to a term of from one to fifteen years in the state reformatory for women at Shakopee. According to the Minnesota State Board of Medical Examiners, Mrs. Planque was indicted by the grand jury of Hennepin County, December 9, charged with manslaughter in the first degree, and on December 19 she was permitted to plead guilty to manslaughter in the second degree. The indictment was returned following the death of a 19 year old Minneapolis girl, following an abortion performed in Mrs. Planque's home in Hopkins. The defendant admitted that she had no medical training.

MISSOURI

Centennial Celebration in St. Louis.—The St. Louis Medical Society will observe its one hundredth anniversary, March 22-23.

Bill Introduced.—S. 3 proposes to authorize the board of curators of the state university to establish a general hospital in connection with the school of medicine of the University of Missouri for the care and treatment of the indigent sick of the state.

Society News.—Dr. José Arcé, dean of the Faculty of Medical Science and professor of the surgical clinic, University of Buenos Aires, Argentina, addressed the St. Louis Medical Society, January 26, on "Packing Gauze Drainings After Total Pneumectomy," and Dr. Peter Heinbecker, "Factors Determining the Type of Surgery Applicable in Cases of Spastic Vascular Disease."——At a meeting of the Jackson County Medical Society, January 19, the following members of the Kansas City Pathological Society spoke: Drs. Ward W. Summerville, "Rheumatic Endocarditis and Pericarditis"; Morris S. Harless, "Aneurysm of the Aorta"; Cecil G. Leitch, "Hematological Studies."——Dr. Isidore Friesner, New York, lectured at the Oscar Johnson Institute, St. Louis, January 19, on the fundamentals of otolaryngology.

NEVADA

Bill Introduced.—A. 15 proposes to authorize the sexual sterilization of certain socially inadequate inmates of state institutions.

NEW HAMPSHIRE

New Secretary of Registration Board.—Dr. Fred E. Clow, Wolfeboro, was elected secretary-treasurer of the State Board of Registration in Medicine at a meeting in Concord, January 19. Dr. Clow succeeds the late Dr. Charles Duncan. Dr. Howard N. Kingsford, Hanover, was reelected president.

Bills Introduced.—H. 119 proposes to permit paupers, at the expense of the proper poor district, to obtain for themselves the services of any licensed practitioner of the healing art. H. 135 proposes that no person be required to submit to any form of vaccination or inoculation as a condition precedent to admission to any school, institution of learning or public institution, nor to the exercise of any right, performance of any duty or enjoyment of any privilege. The bill also proposes that any physician who vaccinates or inoculates a child without the written consent of its parents or an adult without the written consent of the adult be subject to a fine of $100 or imprisonment for one year or both.

NEW MEXICO

Bills Introduced.—S. 50 proposes to create the Carrie Tingley Crippled Children's Hospital to provide proper care and treatment for the crippled children of New Mexico and to make available therefor the building erected, furnished and equipped for such purpose by the federal government at Hot Springs, Sierra County. H. 19, to amend the uniform narcotic drug act, proposes to define "narcotic drug" so as to include cannabis. S. 25 proposes to create a board of naturopathic examiners and to regulate the practice of naturopathy. A license to practice naturopathy is to entitle the holder thereof "to administer any and all natural and constructive remedies and treatment in human ailments as taught in standard and chartered naturopathic colleges, schools or universities . . . and to issue birth, health and death certificates." H. 41 proposes to forbid the issuance of marriage licenses unless there is filed with the officer authorized to issue such licenses a physician's certificate showing that both parties to the proposed marriage are free from syphilis. H. 44 proposes to authorize the sexual sterilization of certain socially inadequate inmates of state institutions.

NEW YORK

Bills Introduced.—A. 299, to amend the law requiring the licensing of laboratories and other places in which live pathogenic germs are handled or cultivated, proposes to require such licensure from all places "where live pathogenic micro-organisms or viruses other than vaccine virus are handled or cultivated." The bill also proposes to prohibit all persons, other than licensed practitioners of medicine, dentistry or veterinary medicine or persons acting under the direct supervision of the licensed practitioners noted, to possess or cultivate live pathogenic micro-organisms or viruses other than vaccine viruses unless such persons have satisfied the state commissioner of health that such micro-organisms or viruses in their possession will not become a menace to the public health and unless they hold a permit issued to them by the state commissioner of health. The bill also proposes that all live pathogenic micro-organisms or viruses other than vaccine virus when given away or sold shall bear a label on the container showing the registration number of the distributor which has been issued by the state department of health for the handling of pathogenic micro-organisms or viruses, the name of the person obtaining the material and the destination of the pathogenic micro-organisms or viruses. A. 312 and S. 316 propose to prohibit a person from practicing as a clinical laboratory technician unless licensed by the education department. The bills define "clinical laboratory technicians" as persons who perform any technical laboratory procedures, including bacteriology, biochemistry, hematology, clinical pathology, immunology, parasitology, histology or tissue technic, or basal metabolism, which are used for the purpose of diagnosing, investigating or treating any disease, illness or infection. A. 335, to amend that section of the workmen's compensation act which requires an injured employee to submit to such physical examination as the industrial commissioner or the industrial board may require, proposes to strike out the provision that "such physician or physicians as the employee or carrier may select and pay for may participate in an examination if the employee or carrier so requests." A. 346 proposes to denominate the division of social hygiene in the department of health as the "division of syphilis control." A. 355 proposes to prohibit the issuance of a license to marry until there is presented to the clerk authorized to issue such a license "a statement or statements signed by a licensed physician that each person intending to be married has submitted to a Wassermann or Kahn or other similar standard laboratory blood test and that, in the opinion of such physician, the person is not infected with syphilis or in a stage of that disease that may become communicable and such statements shall be accompanied by a record of the standard laboratory blood tests made." A. 471 proposes to authorize courts to enjoin the unlicensed practice of any profession or vocation for which a license or registration is required by law. A. 513 proposes to prohibit hospitals from permitting an employee to work more than eight consecutive hours in any twenty-four hours or more than forty-eight hours in any calendar week except during an extraordinary emergency.

New York City

Syphilis Clinic Opened.—The New York Hospital recently opened a syphilis clinic in the Lenox Hill-Kipps Bay district. It is planned that this shall be a demonstration unit for handling the disease in a densely settled metropolitan area and also a teaching unit for the training of medical students in treatment and epidemiologic methods of study. Patients seeking admission from the district will be charged regular outpatient rates if able to pay, but no patient residing in the district will be refused admission. Patients from other districts will pay regular charges.

New York University Alumni Meeting.—The medical program of the annual Alumni Day of New York University will be held February 20 at the new building at Twenty-Eighth Street and First Avenue. The entire program will be devoted to discussions of diabetes with the following speakers: Drs. Elaine P. Ralli, William E. Studdiford Jr., Katharine G. Dodge, John H. Wyckoff, Edward B. Gresser, Emanuel David Friedman, Arthur M. Wright, Samuel Standard, Emery A. Rovenstine, Harold Brandaleone and Irving Graef. At a luncheon the speakers were Drs. Wyckoff, dean of the medical school; Samuel A. Brown, dean emeritus, and Mr. William M. Patterson, chairman of the alumni fund. In the evening a dinner will be held at the Hotel Roosevelt.

NORTH DAKOTA

Bills Introduced.—S. 103 proposes to repeal the laws regulating the possession and distribution of narcotic drugs and to enact what appears to be the uniform narcotic drug act. S. 109 proposes to permit county welfare boards to establish dental clinics and to provide dental services. In rendering such dental services the board is not to be limited to "actual indigents, but may extend the benefits hereof to cases in which, by reason of limited family means, such services could not otherwise be secured for any minor without reducing said family to a relief status or indigence, and where said minor would, except for the use of such facilities, be required to forego necessary dental treatment."

OHIO

Bills Introduced.—H. 71, to amend the workmen's compensation act, proposes to add silicosis to the list of compensable occupational diseases. The bill proposes, however, that a workman shall not be entitled to benefits for the contraction of silicosis unless he has actually been exposed to silica dust in his employment in the state for periods amounting in all to at least five years preceding his disablement. H. 77, to amend the workmen's compensation act, proposes to add silicosis, asbestosis and anthracosis to the list of compensable occupational diseases.

PENNSYLVANIA

Obstetric Institute.—Dr. John Cooke Hirst, Philadelphia, conducted a series of obstetric institute lectures in the autumn under the auspices of the state health department and financed by social security funds. Dr. Hirst lectured at Altoona, Norristown, Danville, Wilkes-Barre and Allentown. In addition he conducted a clinic at Hazelton and, in association with Dr. Roy R. Snowden, Pittsburgh, another at Uniontown.

Personal.—Dr. James F. Schell, Philadelphia, is director of the survey on medical care of the indigent described in THE JOURNAL, January 9, and not Dr. Samuel Horton Brown. According to the *Pennsylvania Medical Journal*, Dr. Brown was first chosen to head the survey but was unable to give sufficient time to the work. Dr. Schell was appointed January 11.——Dr. Frederick J. Bishop, Scranton, recently chosen president elect of the Medical Society of the State of Pennsylvania, was honored by a testimonial dinner given by the Lackawanna County Medical Society at Scranton, December 3. Dr. Charles Falkowsky Jr., Scranton, was toastmaster and Dr. Wilmer Krusen, Philadelphia, made the principal address. The society presented to Dr. Bishop a plaque listing the offices he had held in the organization and his record of service in his thirty years of practice.——Among physicians in the state legislature are Drs. George A. Deitrick, Sunbury, and Leo C. Mundy, Wilkes-Barre.

Philadelphia

Society News.—The meeting of the Philadelphia County Medical Society, February 10, was devoted to a group of papers on "Etiology and Treatment of Edema," presented by Walter G. Karr, Ph.D., and Drs. Frederick William Sunderman, Charles L. Brown, Ralph M. Tyson and Seymour DeWitt Ludlum.——Dr. Leonard Colebrook, London, a member of the Medical Research Council of Great Britain, delivered a Nathan Hatfield Lecture before the College of Physicians of Philadelphia, February 3, on "The Control of Hemolytic Streptococcic Infection with Particular Reference to Puerperal Fever."——At a meeting of the Philadelphia Laryngological Society, February 2, the speakers were Drs. Thomas F. Furlong Jr., on "Preoperative and Postoperative Care of Mastoiditis"; Robert J. Hunter, "Methods of Interpreting Fork Tests in Decibels," and Douglas Macfarlan, "Ionization and Other Uses of Electricity in the Ear."——The Philadelphia Roentgen Ray Society and the Obstetrical Society of Philadelphia held a joint meeting February 4, at which the speakers were Drs. Benjamin H. Orndoff, Chicago, on "Diagnostic Uses of the X-Ray and the Biopsitome in a Study of the Corpus Uteri," and Paul A. Bishop, "X-Ray Pelvimetry."

SOUTH DAKOTA

Personal.—Dr. Reginald H. Payne, Tripp, has been named director of a new health unit recently established in Hutchinson County, with headquarters at Tripp.——Dr. Clarence E. Sherwood, Madison, was elected president of the South Dakota Health Officers' Association at its annual meeting recently.

Bill Introduced.—H. 40 proposes, in effect, to compel all hospitals supported in whole or in part by public funds or exempted from taxation to permit all "physicians" to practice within their confines. A "physician" within the meaning of the bill is to be a person who has been "graduated from a school of practice in which the course of instruction shall have been for a period of not less than three years, or nine months each, including the following subjects: anatomy (with a full course in dissecting), histology, embryology, physiology, chemistry, toxicology, pathology, symptomology [sic], bacteriology, obstetrics, gynecology, psychology, mental and nervous diseases, skin and venereal diseases, general surgery, medical jurisprudence, hygiene and dietetics, public health and sanitation, with one year of clinical practice."

TENNESSEE

Bill Passed.—S. 174 has passed the senate, proposing to make it unlawful for any person, other than a registered pharmacist, wholesale druggist, producer, or compounder, to sell, barter or possess cannabis or any compound, derivative or preparation thereof, except in accordance with the prescription of a licensed physician, dentist or veterinarian.

State Association Sponsors Course in Obstetrics.—A ten weeks course of lectures in obstetrics under the circuit plan is being presented to Tennessee physicians with Dr. Frank E. Whitacre, assistant professor of obstetrics and gynecology, University of Chicago School of Medicine of the Division of Biological Sciences, as the instructor under the auspices of the Tennessee State Medical Association. There are five towns in a circuit, with one session a week in each town. An hour's lecture and an hour for a clinic make up the instruction. Physicians may also consult Dr. Whitacre concerning their own cases as time permits. The fee is $5, the greater part of the expense being borne by the state medical association, the Commonwealth Fund, the Vanderbilt University School of Medicine, Nashville, and the University of Tennessee School of Medicine, Memphis. Headquarters are in Memphis.

Bills Introduced.—S. 193 and H. 330 propose to create a board of naturopathic examiners and to regulate the practice of naturopathy. The bills provide that naturopathy "shall be construed as meaning the use and practice of Psychological and Material health methods and aids in purifying, cleansing and normalizing human tissues for the preservation or restoration of health according to the fundamental principles of anatomy, diagnosis, psychology and applied psychology. Naturopathic practice employs and sanctions the use among other agencies of Phytotherapy, Dietetics, Suggesto-therapy, Hydrotherapy, Zone-therapy, Bio-Chemistry, Massage, External Applications, Electro-therapy, Mechano-therapy, mechanical and electrical appliances, hygiene, first-aid, sanitation and Heliotherapy . . . provided, further, that the practitioners herein licensed shall not write or fill prescriptions calling for drugs." The bill further provides that such a practitioner shall not be permitted to use "X-ray Roentgen Ray machines for healing purposes, nor shall he follow the profession of a medical doctor."

UTAH

Bill Introduced.—H. 86 proposes to authorize the trial court in actions for personal injuries to require the plaintiff to submit to a physical examination by one or more physicians designated by the court.

WASHINGTON

Bills Introduced.—S. 103 proposes, as a condition precedent to the issuance of a license to marry, that each applicant therefor "produce and file . . . the certificate of a duly qualified physician, reciting that the applicant has submitted to a physical, mental and serological examination of a scope prescribed by the state department of health, and further certifying that the applicant is not feeble-minded, an imbecile, idiot, insane, a common drunkard, afflicted with pulmonary tuberculosis in its advanced stages, or any venereal disease." S. 134 proposes to repeal the law authorizing the sexual sterilization of certain socially inadequate persons and to enact in its stead a far-sweeping "eugenical sterilization law." S. 141 proposes to prohibit the possession, sale or distribution of amytal, luminal, veronal, barbital, acid diethylbarbituric, except on the prescription of a licensed physician, dentist or veterinarian. S. 140 proposes to require the proprietor or manager of a pharmacy to preserve for not less than five years the original of every prescription compounded or dispensed in the pharmacy and to permit the prescriptions to be inspected at all times by the prescriber, the board of pharmacy or any officer of the law.

WYOMING

Bills Introduced.—H. 107 proposes to require governmental hospitals and all hospitals exempted, in whole or in part from taxation, to admit and care for "the patients of any regularly licensed physician, osteopath, chiropractic [sic], optometrist or dentist under the same terms and conditions as may be promulgated by the management of said hospital as the patients of any other regularly licensed physician, osteopath, chiropractic [sic], optometrist or dentist." H. 116 proposes to create a board of drugless therapeutic examiners and to regulate the practice of drugless therapy, which is defined as "any system of therapy that does not resort to the use of drugs, medicines, or operative surgery for the prevention, relief or cure of any disease."

GENERAL

Mid-South Graduate Assembly Postponed.—On account of flood conditions, the Mid-South Post Graduate Medical Assembly which was to have been held in Memphis, Tenn., February 16-19, has been canceled.

Conference on Occupational Disease.—The Mid-West Conference on Occupational Disease will be held at the Hotel Statler, Detroit, May 3-7, under the auspices of the Detroit Department of Health, the Michigan State Medical Society, the Wayne County Medical Society and other interested agencies. The conference will be held in conjunction with the annual meeting of the American and Michigan associations of industrial physicians and surgeons.

Exhibit of Scientific Photography.—Monday February 15 is the closing date for entries in the international exhibit of scientific and applied photography sponsored by the Rochester (N. Y.) Technical Section of the Photographic Society of America (THE JOURNAL, January 16, p. 214). The exhibit, which will be on view from March 15 to April 3, will be divided in ten sections, including one on "Radiography and Medical Photography." Mr. C. B. Neblette, Rochester Athenaeum and Mechanics Institute, Rochester, N. Y., is secretary of the exhibit.

Society News.—Dr. Wingate Todd, Cleveland, was the guest speaker at the fall meeting of the Society for the Study of Asthma and Allied Conditions in New York in December. His subject was "The Value of Developmental Growth Studies in the Evaluation of Clinical Allergy." A round table conference was presented by the allergy clinic of Roosevelt Hospital.——Dr. John C. Wilson, Los Angeles, was chosen president-elect of the American Academy of Orthopedic Surgeons at the annual meeting in Cleveland, January 10-14, and Dr. Arthur Bruce Gill, Philadelphia, was installed as president. Dr. Philip Lewin, Chicago, was made vice president and Dr. Carl E. Badgley, Ann Arbor, Mich., secretary. The next meeting will be in Los Angeles, Jan. 15-19, 1938.

Life Expectation Compared.—The U. S. Bureau of the Census has recently issued figures comparing the life expectation of Negro and white men and women. Of 100,000 Negro males born alive, 91,268 will reach the second year of life as compared with 93,768 white male infants; 89,755 Negroes

will enter the third year of life as compared with 92,837 white infants; 82,903 Negroes and 88,621 white persons will reach the age of 21 and 14,419 Negroes and 29,471 white persons will reach 75. The death rate in the first year of life for Negro males is 87.32 and for white males it is 62.32 per thousand. In the second year the rates drop to 16.57 for Negroes and 9.93 for white children. They decrease till they reach 2.11 for Negroes and 1.47 for white children in the eleventh year and thereafter increase. In the forty-fifth year the rates are 21.81 for Negroes and 8.74 for white persons; in the seventy-fifth year, 87.75 for Negroes and 78.61 for white persons. The maximum expectation of life, which is applied to those who have survived the first year, is 51.08 years for Negro males and 62.04 for white males; 52.33 for Negro females and 64.93 for white females.

Warning Against Impostor.—It is reported from Detroit that a man posing as a clinical pathologist is visiting physicians there asking them to endorse checks to pay for repairs on his automobile. He called on one physician, who entertained him for a day and night, during which time he discussed clinical pathology without betraying himself. On the second day he looked at automobiles, appearing to be disgusted with his old one. Later he left his host, saying he wished to go to a bank, but returned shortly, saying that the bank demanded identification. When the Detroit physician said he could not identify him, the visitor exhibited a bank book with a balance of $678. The physician then cashed a check for $50 on the Huntington National Bank, Columbus, Ohio. After an hour or more the "clinical pathologist" went out for a shave but telephoned that the Packard service agency was to pick him up and he would telephone later. That was the last heard of him. The Packard station reported they had no car for such a person and the Columbus bank reported it had no account for the man, who called himself Brown, and was about 5 feet 9 inches tall; dark brown wavy, wiry hair, a high forehead, dark skin, large brown eyes; thick skin with deep wrinkles; teeth excellent and very white; weighed about 170 pounds. He wore a dark brown suit with a pin stripe, an overcoat of Oxford gray and a light felt hat.

Medical Bills in Congress.—*Bills Introduced:* S. 396, introduced by Senator Steiwer, Oregon, proposes, among other things, to grant pensions to contract surgeons who served in the Indian wars from 1817 to 1898. S. 1237, introduced by Senator Gibson, Vermont, proposes to reenact all laws in effect March 19, 1933, granting pensions to veterans of the Spanish-American War, the Boxer Rebellion and the Philippine Insurrection, and their widows and dependents. S. 1240, introduced by Senator McNary, Oregon, proposes among other things to grant pensions to contract surgeons of the Spanish-American War, including the Philippine Insurrection and the Chinese Boxer Rebellion. H. R. 3859, introduced by Representative Allen, Louisiana, proposes to erect a 300 bed addition to the veterans' facility at Alexandria, La., for the care and treatment of medical, surgical and neuropsychiatric disabilities. H. R. 3867, introduced by Representative Voorhis, California, proposes to provide benefits now accorded to other veterans to persons who served in the Army of Occupation before July 2, 1921. H. R. 3873, introduced by Representative Hennings, Missouri, proposes to prohibit the sale, possession and transportation of cannabis and its derivatives and compounds, except when sold, possessed or transported for medicinal and lawful uses by the producer or manufacturer thereof or dealer therein to licensed physicians, surgeons, dentists, pharmacists, druggists and veterinarians, under such rules and regulations as shall be prescribed by the Commissioner of Narcotics. H. R. 3999, introduced by Representative Hook, Michigan, proposes to erect a veterans' hospital in the upper peninsula of Michigan. H. R. 4004, introduced by Representative Schuetz, Illinois, proposes to add the name of John D. Schwieger to those honored by the act recognizing the public service rendered by Major Walter Reed in the discovery of the cause and means of transmission of yellow fever. H. R. 4010, introduced by Representative Gasque, South Carolina, proposes to provide hospitalization and domiciliary care to former members of the Regular Establishment not dishonorably discharged. H. R. 4013, introduced by Representative Gasque, South Carolina, proposes to grant pensions and increases of pensions to certain soldiers, sailors and nurses of the War with Spain, the Philippine Insurrection, or the China Relief Expedition. H. R. 4094, introduced by Representative Arends, Illinois, proposes to create service origin presumptions for spastic paralysis, chronic arthritis, chronic rheumatism and chronic heart disease, when contracted by veterans of the World War. H. R. 4219, introduced by Representative Wilcox, Florida, proposes to construct a marine hospital in or near Miami, Florida.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 9, 1937.

The Influenza Epidemic

A widespread but mild epidemic of influenza is prevalent in the British Isles. Its extent can be judged from the fact that 8 per cent of the London police force are affected, while their normal total sick list is 3 per cent. In Leicester 11 per cent of the factory workers and 40 per cent of the schoolchildren are affected and the street car service has had to be curtailed because of the large number of men who are ill. The Irish Free State Department of Public Health has circularized local bodies urging them to organize health and nursing services, and where an epidemic of influenza occurs warning should be given through the press. The British Ministry of Health has issued the following advice as to the prevention of influenza: Rooms should be well ventilated and airy but not drafty. Nourishing food is desirable. It is often well to take cod liver oil. Gargling is useful. The gargle can be made by adding to a tumbler of warm water either a tablespoonful of compound glycerin of thymol or just enough potassium permanganate to give a pink color. If crowded places are avoided there will be less danger of catching influenza.

Last week 325 deaths were ascribed to influenza in 122 large cities of England and Wales (covering a population of more than 20,000,000) compared with ninety-seven for the previous week. The number of deaths in Greater London (population 8,500,000) was 232. The number of notifications of acute primary and influenzal pneumonia in the whole country was 1,542, against 844 in the previous week. The mildness of the epidemic so far is shown by the fact that the totals of deaths from influenza and notifications of pneumonia are far below the totals for several consecutive weeks throughout the epidemics of 1928-1929 and 1932-1933.

Delivery of Virus by Parachute

In the *Veterinary Journal* the chief veterinary officer of the Bechuanaland Protectorate illustrates a new use for the airplane in preventive medicine. Foot and mouth disease was discovered in a herd of native cattle. There were some 261,000 cattle in an area of 60,000 square miles. The whole of the cattle could be quarantined, so that it was possible to adopt preventive virus inoculation of the healthy cattle. The chief difficulty was to transport the inoculation material to the various areas in which veterinary officers work with their staffs. It was impossible for automobiles to reach the infected places, and native runners would have taken at least ten or twelve days. The chief veterinary officer devised a system of delivery by parachute in places where airplanes could not land. It was found that 7 square feet of parachute was required for each pound of weight of load. The parachute consisted of a square piece of calico, of which the four corners were firmly tied to four stout strings about 12 feet long, and the tin was tied to the free ends of these. The parachutes were folded with the strings carefully arranged to avoid tangling and were thrown out of the open door of the cabin of the plane from a height of 500 to 800 feet when gliding into the wind. The parachutes were dropped without a single failure. The report states that the use of the airplane shortened the duration of the outbreak by at least two months and that its value for establishing speedy contact with different parts of the territory is inestimable.

The British Medical Journal in New Type

For some time committees of the British Medical Association have had under consideration a throughgoing reform of the typography and layout of the *British Medical Journal*.

This has been done under the advice of Mr. Stanley Morison, who was largely responsible for the change of the type face undertaken by the *Times* in the latter part of 1932. The main object is to help the reader and the reader's eyes. The type used for the first issue in 1937 is the product of some years of experiment in the offices of the *Times*, where it was subjected to severe tests. It gives a clear plain print, especially designed for easy reading when set up in columns and produced under newspaper conditions. It is bolder and more legible than any type previously used by the *Journal*. The types used for headings and cross-headings are based on the letter of the text fount, thus achieving unity throughout the pages—a feature lacking in many periodicals.

A striking change has been made in the cover, which is now gray with a scarlet device. A new feature is the list of "Principal Contents," which are for the first time displayed on the outside. This is claimed to be "a gain to all whose time is precious" and to "enable the reader to single out from other matter the subjects dealt with in original papers and special articles." The full table is in its usual place. Another new feature is the adoption of the Harvard system of giving references to scientific literature and the use, with slight modification, of the abbreviations of the World List of scientific periodicals.

PARIS

(From Our Regular Correspondent)

Jan. 16, 1937.

Some Social Insurance Statistics

Dr. Phillip Dally in the *Presse médicale*, Dec. 16, 1936, states that in certain countries like France, where state ownership is being rapidly extended to include a number of industries, it is not surprising to note that state medicine is the next objective. In this light, it is of interest to study the statistics of those countries in which sickness insurance is compulsory, as to whether such a law has been of benefit to the citizens in the form of a lower morbidity and mortality rate. A study of this question for the years 1911-1934 appears in the 1936 report of the Committee on Hygiene of the League of Nations. French statistics cannot be used for comparison because the social insurance law has been in effect only since 1930. South Africa, Australia, Canada, New Zealand, Norway and Holland had a mortality rate of 10 per thousand in 1914. Of these, obligatory sickness insurance existed only in Norway. The mortality rate in the United States was 11 per thousand, but this includes the high mortality rate of Negroes. If this were excluded, the rate in the United States, in which there is no sickness insurance, would be less than in those countries in which it is obligatory. Only one country, Chile, in South America, has compulsory sickness insurance. The mortality rate in Chile in 1934 was 26.8 per thousand, as compared to 11.8 per thousand in the republic of Argentina and 10 per thousand in Uruguay. If one studies the influence of sickness insurance on certain causes of death especially amenable to medical treatment, such as diphtheria, some interesting facts are brought out. In the United States and Canada, with the exception of New Orleans and Quebec, no city has a mortality rate from diphtheria above 6 per cent. In Germany and Great Britain, where sickness insurance is obligatory, the mortality rate of diphtheria is 11 per cent and 11.6 per cent, respectively, as compared to 5.2 per cent in Spain and 4.5 per cent in Australia and practically nothing in New Zealand. In none of these three last named countries is sickness insurance obligatory. Similar mortality rates hold true for pulmonary tuberculosis for those countries in which sickness insurance is compulsory compared to those in which it is not.

With regard to infant mortality, the rate for the countries in which sickness insurance is not obligatory is 61 per thousand for South Africa, 72 for Canada, 60 in the United States, 44 for Australia, 32 in New Zealand, 47 in Sweden, 46 for Switzerland and 43 for Holland. This compares favorably with the following countries, in which sickness insurance is obligatory: Germany 66 per thousand, England 59, Denmark 64 and certain cities such as Santiago (Chile), 244.

The conclusion to be drawn from this report, according to Dally, is that the morbidity and mortality rates are lower in the countries in which sickness insurance is not obligatory.

The Odious "Patente" Tax

In an article entitled "The Odious 'Patente' Tax" in the Dec. 15, 1936, issue of the *Siècle médical*, the unfairness of this additional tax on all members of the liberal professions is complained of. In France, every physician and dentist is taxed by the city or county in which he lives, on his professional income after deductions for professional expenses. In addition there is a personal property tax based on the rent paid for an apartment or house. The "patente" is a third tax, levied on the members of all liberal professions and based on the rent paid for an office or on rental value of the rooms used for professional purposes, if such quarters constitute a portion of the apartment or house in which the physician or dentist, for example, lives. Only within the last few years has the government restricted the "patente" (or privilege) to the rent paid for an office or on the rental value of the rooms actually used as offices. Before this recent lightening of the tax burden, a physician or dentist had to pay the "patente" not only on the rooms used as offices but also on the rental value of his house or apartment if these were separately located, as well as a third "patente" on any suburban residence, even though not used for professional purposes. The medical and dental professions have protested in vain against the injustice of these three taxes on net earnings, on personal property and on the license or privilege to practice; i. e., the "patente." The author of the article in the *Siècle médical* states that the "patente" tax has become such an additional burden that many physicians and dentists will be obliged to close their offices. Although the "patente" was abolished in 1935 for space not used for professional purposes, this suppression has been followed by higher taxes for the rooms used for professional purposes. A letter from a practitioner in the south of France is quoted as complaining of a "patente" tax in 1935 of 8,500 francs (about $425 at the present rate of exchange) based on a rent of 11,700 francs. For 1936 the "patente" tax has risen to 16,500 francs, although the rent of the offices has not been increased. Another correspondent states that his "patente" tax is 8,000 francs and his rent only 6,300 francs.

Abuse of Free Medical Care by Physicians and Their Dependents

In the Dec. 13, 1936, *Concours médical* appears an article on the care of members of the medical profession, by one of the editors of the journal, Dr. Raphael Massart. The article is the second of a series on reflections on the practice of medicine. Massart states that both tradition and the code of ethics demand that medical care shall be given to physicians and their dependents without a thought of receiving any remuneration. This custom, which is one of the most noteworthy evidences of the solidarity of the medical profession, is unfortunately not always respected; hence the committees on ethical relations here are frequently called on to hear complaints of abuses of this privilege. Although the code of ethics imposes certain obligations on those who are called on to treat their professional brethren and their dependents, there are also certain duties incumbent on those who receive such free treatment. Every medical man hesitates to call on another to care for himself and his family because he appreciates the loss of time and the fact that in many an instance the recipient of such care cannot reciprocate directly or indirectly. The result is

that the physician and his dependents are often less well cared for than those who pay for medical attendance, so that in many cases one prefers to make an arrangement with the family physician or specialist to pay for all visits.

In the earlier years of his medical practice, Massart replaced other physicians during their absence, and he cites an instance in which the wife of a physician successively consulted five or six obstetricians before deciding on one to take charge of her confinement. Such a practice is excusable if a fee is paid for each consultation but is distinctly an abuse of a custom imposed on us by the code of ethics of our profession. Similar abuses occur in other branches of medicine, especially in the case of the specialties. For the same ailment a circuit of four or five specialists is often followed. This perhaps could be condoned if it were not for the fact that only too often the diagnoses and proposed treatments of the various specialists are compared and unjustifiably criticized. Such criticisms may unintentionally reach the ears of paying patients, to the detriment of the reputation of the specialists. It is gratifying to any medical man to have his colleagues call on him to treat themselves and their families and it is quite human to draw the conclusion that, whenever these colleagues have occasion to call some one in consultation in their own practice or to refer a case to a specialist, the one who had been selected to treat the physician and his family should be called on to render service to the pay case. Many specialists, especially surgeons, complain that they treat physicians and their families, but when the medical man has the opportunity to refer a case, he forgets all about his own preference and gratitude, sending it to some one to whom he is not at all indebted.

Massart cites a case in which a physician asked a well known specialist to travel a long distance to see him in consultation and was quite angry when the specialist refused to leave a busy practice for several days without an adequate recompense. The calling of the specialist was unnecessary so far as the diagnosis and treatment were concerned. The physician, who had been well cared for, simply wished to gratify a whim that the particular specialist should be called.

There can be no question that the economic situation of many a colleague will not permit the additional burden of payment of medical care for himself and his family, but the duty of one member of the profession to give such care without thought of remuneration must not be abused.

BERLIN

(From Our Regular Correspondent)

Dec. 28, 1936.

Research in Genetics

In Germany, so-called empirical hereditary prognosis has come to the fore. A prediction with regard to the offspring of a person whose heredity is defective or whose blood relatives present a hereditary taint is termed a "theoretical hereditary prognosis." But if the hereditary history is unknown or if irregularities are discernible therein the most careful calculations are unable to supply a reliable genetic picture of the generation under observation. Here it is that "empirical prognosis" enters in, a system by which conclusions based on the examination of specific instances are made applicable to the whole. "Empirical prognosis" differs radically from theoretical hereditary prognosis in that it dispenses with a knowledge of the genetic history and of the gene manifestation, with the rôle of the environment and also with the insistence on absolute diagnostic exactitude. Professor Luxenburger of the German Institute for Psychiatric Research at Munich has discussed the question in "Erbarzt." He has assembled the results of his investigation in empirical genetic prognosis. These are arranged according to the four great psychic-hereditary groups in tables 1, 3, 4 and 5.

The figures in table 1 indicate that the rate of probable morbidity of schizophrenia for the children of afflicted parents amounts to 16 per cent. The interrelation of a hereditary prognosis of schizoid psychopathy and the status of the parents with regard to this disease is shown in table 2.

The rates for schizophrenia and for schizoid are dependent on the psychic abnormality of the parents and above all on whether or not the latter are schizoid psychopaths. In schizophrenic families, any nonschizophrenic member who presents no psychic anomalies and who above all is not a schizoid psychopath stands an excellent chance of having hereditarily healthy offspring. Such a prognosis, however, is less favorable if both parents are afflicted.

TABLE 1.—*Empirical Hereditary Prognosis in the Schizophrenic Group*

	Schizophrenia, per Cent	Schizoid Psychopaths, per Cent	Total Number of Adults Investigated
Children	16.4	32.6	1,585
Grandchildren	3.0	13.8	1,280
Nephews, nieces	1.8	5.1	2,985
Great-grandchildren	...	3.9	71
Grand-nephews	1.1	...	...
Grand-nieces	1.6	1.9	567
Cousins	1.8	9.8	665
Average for the population	0.85	2.9	...

TABLE 2.—*Interrelation of a Hereditary Prognosis of Schizoid Psychopathy and Status of Parents*

	Probability of Schizophrenia in Child, per Cent	Probability of Schizoid Psychopathy in Child
Neither parent schizoid	1.9	2.5
One parent schizoid	4.1	8.8
Both parents schizoid	12.0	29.0

According to more recent studies of children, the prognosis in these diseases has been improved; the rate of probable peril from manic-depressive insanity is no longer 32 per cent but 24 per cent, which is still high, especially if measured by the incidence of the psychosis among the population as a whole.

The differentiated hereditary prognosis for children of manic-depressive parents is represented in table 4.

From these data it may be concluded that if even one parent is diseased an extremely bad hereditary influence will be exercised and that the magnitude of the transmitted taint is not substantially increased if the other parent is a cyclothymiac psychopath. These figures indicate that the earlier hypothesis of the decisive rôle of the dominant traits in the inheritance of manic-depressive disorders is perhaps correct and that only a minor significance is as a rule to be attached to the recessive factors.

As the figures in table 5 show, little is yet known of the probability that children of epileptic patients will present the disease. Still the figure of 10 per cent appears more significant than that of 2 per cent, as it seems to have been based on more careful calculation.

Many new facts have been brought to light in the sphere of hereditary feeblemindedness. The recessive nature of the inheritance has become evident as well as the fact that persons of "dull mentality" are not to be considered as one with the feebleminded. This point is provided detailed illustration by table 6.

Investigations of the propagation of schizophrenic subjects have been carried on by Dr. Skalweit of the Psychiatric Clinic of Rostock. He found that the rate is substantially less than

that for the population as a whole. The basis for this is always to be found in the lesser incidence of marriage. Since this depends on the inherited characters of the schizophrenic and not on external circumstances, it does not matter whether the onset of the disease is early or late. Among schizophrenic subjects there is also a reduced marital fertility. The different groups of schizophrenic subjects present individual peculiarities. The hebephrenic, for example, offer the lowest figure for marriages previous to the onset of the disease. On the other hand, those groups in which the illness manifests itself in circular insanity strangely enough resemble the manic-depressive patients in the incidence of marriage and fertility. This incidence prior to the onset of illness coincides with that of the average members of the population. In each generation some 10 per cent of schizophrenic subjects are the offspring of a diseased parent. Skalweit believes that this progeny would be reduced by about 33 per cent if every schizophrenic patient were to undergo sterilization on the first admission to a clinic. From the eugenic point of view early diagnosis may be of the utmost importance, as it may make possible an obliteration of the procreative function of the patient before the onset of the disease.

Dr. Reichardt has investigated the heritability of ozena at the Freiburg-in-Breisgau University Clinic for diseases of the nose and throat. Numerous observations lead him to conclude that the predisposition to this disease should be considered the prime factor. Reichardt examined not only the ozena patients of the clinic but their relatives as well. He found, like other investigators before him, that in many instances the disease may be observed to continue over several generations. He regards it as highly improbable that an infection is responsible for the disorder. Research on twins has demonstrated that ozena may be detected in one pair of enzygotic twins, whereas in another pair a manifest atrophic rhinitis may be established. The pathogenic predisposition is apparently inherited as a dominant character.

TABLE 3.—*Empirical Hereditary Prognosis in the Cyclothymiac Group*

	Manic-Depressive Insanity, per Cent	Psychopaths of the Cyclothymiae Circle, per Cent	Number of Adults Investigated
Children	24.4	13.4	258
Nephews and nieces	2.4	2.0	602
Cousins	2.5	1.0	867
Average for population	0.44	0.8	...

TABLE 4.—*Differentiated Hereditary Prognosis for Children of Manic-Depressive Parents*

	Probability of Affliction with Manic-Depressive Insanity, per Cent	Incidence of Psychopaths of the Cyclothymiae Group, per Cent
Both parents manic depressive	38.7	50.0
One parent manic depressive, the other a cyclothymiac psychopath	29.6	17.9
One parent manic depressive, the other normal	30.6	14.5

Other investigations carried on by Dr. Scheurlen at Tübingen concerned the heritability of pigmentary degeneration of the retina. Examination was made of 506 patients who presented retinitis pigmentosa. The relatives of these patients were likewise examined. An equal familial distribution of the disease was revealed besides indications of a predominantly recessive hereditary predisposition. Close consanguinity of parents played no decisive part in the manifestations of the affliction, wherefore it is concluded that the entire population has been permeated for centuries with the pathologic gene (this last conclusion was made on the basis of investigations carried on in Württemberg). The number of cases in proportion to the total population at a given time has neither increased nor decreased in the course of the last fifty years.

TABLE 5.—*Empirical Hereditary Prognosis in the Epileptic Group*

	Epilepsy, per Cent	Psychopathy of the Epileptic Circle	Otherwise Abnormal
Children	2-10	?	?
Siblings	3	19	16
Nephews, nieces	0.5-1	16	12
Average	0.3	7	9

TABLE 6.—*Recessive Nature of Hereditary Feeblemindedness*

		Imbecile, per Cent	Moronic, per Cent	Dull Mentality, per Cent	Total, per Cent
Children	Both parents feebleminded	..	60	..	60
	One parent imbecile	11	9	10	29
	One parent moronic	3	9	15	27
	One parent of dull mentality	..	5.5	5.5	11
Grandchildren	All grandchildren	..	7	11	18
	Parents normal	..	12	..	12
Nephews and nieces	One parent of dull mentality	..	7	7	14
	One parent normal	0.9	1.5	5.5	8
	Both parents normal	..	4.5	..	4.5
	Average	..	2	4	6

The family trees of ninety-four patients were studied; these showed a descendance of children and grandchildren who were all completely healthy (with the exception of a woman who had retinitis pigmentosa, whose two sons were similarly afflicted). The number of healthy phenotypes present in the descendance amounted to 237. Had these ninety-four patients been sterilized, the birth of only two children with inherited disease would have been prevented, but at the same time 237 healthy descendants would never have been born. Dr. Scheurlen adds that the goal of extermination of recessive hereditary diseases (in addition to the sterilization of diseased persons) will be attained only through the exclusion of the heterozygotes from the hereditary transmission.

Recently the Reichsgericht as supreme court of judicature has decided that a hereditary predisposition to a mental disease on the part of one marriage partner constitutes a legal ground for contesting the validity of a marriage even if during the existence of the marriage no mental disorder has been manifested. Nor is it of legal significance whether or not a psychotic manifestation may have been aggravated during the married state by uncongenial external circumstances or by the reprehensible conduct of the healthy spouse. The only important consideration in the eyes of the law is the establishment of a pathologic predisposition.

A man found guilty of an insult to a person of defective heredity was recently sentenced to two months' imprisonment. The complainant with the hereditary taint had previously undergone sterilization. The defendant was seated in a public house one day when this sterilized man approached and asked if he might sit at the same table, whereupon the defendant had turned him away with a brutal reference to his physical condition.

The National Health Bureau has initiated a sort of genetic census. As this project is incomplete, only makeshift classifications can be used as yet and the persons catalogued are roughly divided into the genetically inferior and the genetically superior. Criminality also is easily distinguishable. The

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organization of the criminologic-biologic service planned by the National Ministry of Justice has helped make this possible. This service renders the hereditary antecedents of criminality more readily demonstrable than was formerly the case. These investigations are to be extended to include all asocial persons. The genetic survey is to be rounded off by a genetic classification of the oldest age group among the school children.

At Bonn, the Rhenish Provincial Institute for Psychiatric-Neurologic Genetic Research has been opened. Professor Pohlisch, director of the university psychiatric clinic, is in charge. This institution houses more than 100,000 case histories. In the center of the building are located the main card catalogue and the collection of genealogical tables. The card index comprises statistical documentary data on more than 300,000 inhabitants of the Rhine Province. Each card sets forth the personal data, the number of times admitted to hospitals and similar institutions and the diagnoses made on such occasions. In addition there are cross references to the records of the person's relatives, if such records are also to be found in the card index, besides cross references to the appropriate genealogical table. A good 50 per cent of persons for whom cards have already been filed represent cases of mental and nervous disease; the other 50 per cent of the cards contain records of the relatives of these persons. The catalogue will be extended to include records of all persons who in the course of the past 100 years have been admitted to any kind of an institution for the mentally deficient within the Rhine Province. This will mean a total of about 500,000 cards without including the records of the relatives. This vast assemblage of material will make possible voluminous research studies of the origins of mental disease. The source material on schizophrenic subjects, for example, already is represented by some 50,000 cards.

BUDAPEST

(From Our Regular Correspondent)

Jan. 9, 1937.

The National Medical Week

During National Medical Week Dr. Charles Waltner read a paper on the action of cereals on bone development. He examined the action of cereals on the bones by replacing maize flour as the source of starch in the Steenbock-Black mixture with other substances rich in carbohydrates. Severe rickets developed if the mixture contained maize flour, wheat flour, wheat starch or rice starch even when it contained beet sugar. The rickets producing action of maize flour was stopped or reduced by the admixture of the extract of oats or of barley flour extracted with 5 per cent acetic acid. Instead of maize flour and other sources of carbohydrate, he used other sources, which gave the following order of severity of the rickets: tapioca +++, sago ++, barley flour + and oats flour +. The difference observed in the production of rickets by the various carbohydrate sources depends on their phosphorus content.

COBRA TOXIN FOR THE TREATMENT OF NEURALGIA

Dr. Endre Kubányi treated in his clinic a large number of facial neuralgias. His experience is that the causes are traceable in a very small percentage of the cases. Kubányi treated seven patients with cobra toxin. A complete cessation of all pain was attained in two of these patients. In two of the patients there was no effect noticeable, while in the other three patients, who were accustomed to large doses of morphine, the result was uncertain.

MUSEUM SPECIMENS PREPARED BY A GALVANOPLASTIC METHOD

Dr. Károly Wolff exhibited museum specimens that were prepared by a galvanoplastic method. Infant corpses with this method can be exhibited as a dry preparation. The method is successful only in case the skin of the cadaver is freed from all vernix caseosa. After adequate preliminary treatment, galvanization is followed by complete success. The metal deposited on the surface of the skin does not render the structure of the skin invisible, but every wrinkle and fold or the tiniest warts are strikingly brought out, and the whole cadaver becomes like a statue. As such a preparation is clean, odorless and dry and can be kept in the air without any special protecting case, the method is excellent for the preservation of such specimens as amputated limbs, and larger objects in which the pathologic changes are on the surface.

VIENNA

(From Our Regular Correspondent)

Dec. 4, 1936.

Diet Treatment of Putrefactive Dyspepsia

In a lecture before the Vienna Society of Physicians, Professor Porges discussed putrefactive dyspepsia. Successful treatment will be difficult if the pathology of the disorder is not understood. The disease is first manifested as a recurrent obstipation, then later diarrheal discharges containing bloody mucus appear, an achylia gastrica may be established, complaints of colicky pain are not infrequent and a proctosigmoiditis finally sets in accompanied by all the symptoms of a pronounced putrefactive dyspepsia. Patients usually receive a bland cellulose-free regimen consisting of gruels, mashed potatoes, zwieback, cakes and so on. Nevertheless the already marked emaciation of the patient is seen to progress still further, lack of appetite and vomiting add greatly to his discomfort, and there is a persistent typhlitis with high grade secretion of the diseased cecal mucosa. These secretions decompose, and the products of putrefaction irritate the intestinal mucosa, which in turn reacts by hypersecretion. The motility of the entire large intestine becomes highly irritated by these products of decomposition (it is a question of a putrefaction of the intestinal secretions and not of the chyme) and the result is diarrhea. Professor Porges next outlined the type of dietetic regimen that he uses in the treatment of this disorder. Ten years ago he pointed out that the ingestion of nutriment containing cellulose was important in the dietetic treatment. He prescribes at least 200 Gm. of black bread daily, an equal amount of potato and, in addition, a mixed cellulose-free regimen: meat, eggs, cheese, fruit juices, butter, fats and light amylases. Even if this regimen does not immediately agree with the patients it should not be abandoned, for soon the condition improves and they are able to consume amazing quantities of bread and butter. The diarrhea then quickly ceases, body weight increases rapidly and, if the patient adheres to this regimen, a permanent improvement in general health becomes manifest. An explanation of the favorable effect of this diet is to be found in the fact that fermentable carbohydrates are enabled to reach the cecum in abundant quantity. Within the cecum the ferments work a rapid decrease in the bacteria of putrefaction and in this biologic way the septic dyspepsia is arrested. The readily decomposable amylases are not suitable for the foregoing purpose, as they are already nearly completely absorbed within the small intestine, whereas a considerable portion of the black bread and potatoes, if these foods are administered in sufficiently large quantities, avoids the digestive process of the small intestine and attains the cecum, wherein it is permitted to exercise its function of purification.

Decline in Austria's Birth Rate

Figures that have just been made public in the *Statistichen Nachrichten* of the Public Health Bureau might well be the basis for apprehension with regard to the country's future. The nationwide decline in the number of births is quite marked, although there still exists a slight excess of births over deaths. But in Vienna in 1935 there were 25,205 deaths and only 12,179

living births; in other words, twice as many persons died as were born. As the number of marriages contracted is likewise steadily on the wane (within five years the number of marriages has declined by more than 4,000) and as bad economic conditions conduce to the childlessness of most marriages, a rapid aging of the population is surely to be reckoned with. Then too the immigration of outsiders into Vienna affects chiefly the age groups above 25 years, and if the newcomers are married in the capital they will likewise remain childless. Only in the rarest instances do families removing from country to city bring with them minor children.

SWITZERLAND

(From Our Regular Correspondent)

Nov. 20, 1936.

The New Swiss Pharmacopeia

The fifth edition of the Pharmacopeia helvetica, which recently became official, was completed in 1935 after some eleven years of work. Critics have repeatedly termed the new book singularly modern and progressive and it is worth while to consider certain innovations in the new edition. It differs so extensively from its predecessor that the Federal Council deserves credit for inaugurating an entirely new standard. Contrary to the tendency of American and British pharmacopeias to reduce the number of official items, this book contains 204 more than the fourth edition (304 added and 100 deleted). The standards for testing have been removed from individual articles and entered under "General Regulations."

The preparations are classified according to whether they are (1) chemically definite pharmacologic materials of organic or inorganic nature, (2) chemically indefinite pharmacologic materials of organic or inorganic nature, (3) pharmaceutic preparations of materials belonging to one of the preceding groups but not definite chemical entities, or (4) serums, vaccines, other immunologic substances and organotherapeutic preparations.

The new edition includes proprietary substances and thus sets standards for their control which was not possible prior to this time. Proprietary preparations of official items must conform with the monograph stipulations, including name, trade marks, identity, purity and label. These labels must have red letters on white paper for potent drugs such as barbital, cantharis and codeine, and white letters on black paper for poisons such as cocaine, morphine and phosphorus. Local regulations applying to these items must also be followed.

The constituents of official preparations must be designated in terms of weight or, in the case of certain solutions, weight percentages. Medicine glasses indicating teaspoonfuls must have the numbers of teaspoons at 5 cc. intervals, dessertspoonfuls, 10 cc., and tablespoonfuls 15 cc. Potent drugs and poisons prescribed by the drop must be dispensed in dropper bottles or with graduated pipets. Descriptions include the empirical and structural formula as well as the molecular weight and percentage content. They appear under Latin names with synonyms in German, French and Italian—the three languages in which editions of the Swiss Pharmacopeia are available.

The scope of the book is extensive, the intent being to include everything the physician should prescribe, including even the brands of gauze and cotton. The new preparations include "Opialum, Opial, P. H." which is a mixture of the hydrochlorides of the principal alkaloids of opium, the principal ingredient being the morphine salt, 66 per cent. It is designed to replace a popular proprietary.

This book contains the usual tables, including one of maximal doses, which in many instances are below those given in the previous edition.

In some respects it is superior to and in others inferior to the official British and United States standards. Of greatest importance is the fact that it should meet the requirements for the Swiss physicians and pharmacists and on this basis it is superior to the previous editions.

Death of Sir Arnold Theiler

With the passing, at the age of 69, of Prof. Dr. Sir Arnold Theiler, a native Swiss, the world loses a scientific investigator of the first rank. Sir Arnold had come to London to participate in the second International Congress of Microbiology, but shortly before the opening of the convention death overtook him. Theiler was educated at the Universities of Bern and of Zurich; as a young man he went to South Africa. At first he devoted himself to several specific tasks in the Transvaal, but most important of these was the campaign against rinderpest. At length, after the British occupation of the country, Theiler had placed at his disposal a veterinary research institute at Onderstepoort. These "Laboratories for Veterinary Research of the Union of South Africa," as they were called, expanded under Theiler's skilful direction into a great and celebrated center of research. With the help of a numerous staff of collaborators, Theiler here successfully carried on a vast amount of theoretical and practical work. With the constant growth of the institute, the sphere of its activities became ever wider. In 1910 he was appointed professor of the newly created South African Faculty of Veterinary Medicine. On his retirement from office in 1927, he returned to his native Switzerland but continued to maintain close contact with scientific affairs.

Theiler's achievements went far beyond the sphere of veterinary medicine. The clear, purposeful method which he employed in his campaigns against the diseases of cattle in South Africa was based on strictly scientific foundations. Accordingly he has bequeathed to science a wealth of new important and even basic data, the fruit of his investigations, and above all he has enriched the sum of knowledge regarding the protozoal diseases. The mere mention of a few of Theiler's discoveries suggests the fundamental character of his work of experimentation and investigation: the group of intracellular blood protozoa known as "Theileridae" and their many subspecies; the causative organism of East African intermittent fever of cattle; the Theileria para; the Theileria annulata; the disparate Theileria; the cattle trypanosoma (Trypanosoma theileri), and Spirillum theileri, a species found on cattle and sheep of the Transvaal. Another of Theiler's great achievements, and one that represented a notable advance in the fight on disease, was his accurate evaluation of the tick as the transmitter of African piroplasmosis and the exhaustive study of its living habits. He was also the author of numerous works on experimental protective inoculation, serotherapy and the problem of immunization.

CORRECTION

Infant Mortality in Rumania.—In the letter from Rumania published in THE JOURNAL, July 11, 1936, the statement was credited to Professor Mezincescu that "50 per cent of infants died before reaching the first year of life, and of those remaining alive only 50 per cent reached the fifth year." He is also credited with saying that the rate of infant mortality is not as low as it was fifty years ago. A correspondent from Rumania submits the following infant mortality rate for the last five years:

Year	Absolute Number of Deaths Under One Year of Age	Rate of Infant Deaths Under One Year of Age for 100 Living Births	Deaths 1-5 Years
1935	112,415	19.2	64,032
1934	111,520	18.2	77,109
1933	103,765	17.4	41,944
1932	122,184	18.5	66,414
1931	109,041	18.0	57,154

Marriages

KENNON CHRISTIAN WALDEN, Waycross, Ga., to Miss Anne Lilbourne Gravatt, Blackstone, Va., Oct. 22, 1936.

WILLIAM J. WEATHERFORD, Uriah, Ala., to Miss Rachel Milner of Ocean Springs, Miss., Nov. 10, 1936.

AQUILLA RICHARD JOHNSTON, St. George, S. C., to Miss Catherine Deitrick of Richmond, Oct. 24, 1936.

CLAIBORNE BARKSDALE WHITE, Halifax, Va., to Miss Jean Prindle Hardy of Churchland, Oct. 31, 1936.

ROWLAND HILL EDWARDS, Welch, W. Va., to Miss Margaret Hess Hay of Hemphill, Oct. 15, 1936.

SAMUEL HARRY JUSTA, Macclesfield, N. C., to Miss Eva Feldman of Ahoskie, Oct. 25, 1936.

Deaths

Henry C. Fisher ● Brigadier General, U. S. Army, retired, Arlington, Va.; Georgetown University School of Medicine, Washington, D. C., 1891; entered the military service in 1891; was awarded a silver citation for gallantry in action during the Spanish-American War; served in France as chief sanitary inspector, A. E. F., for which he received the Distinguished Service Medal; was cited for exceptionally meritorious and conspicuous service in the Surgeon General's Office, Supply Division, A. E. F.; served in the Canal Zone as chief health officer; formerly commandant of the Army Medical School; was appointed assistant surgeon general with rank of brigadier general in 1929; retired in 1931 by operation of law; was also awarded the Legion of Honor by the French government; fellow of the American College of Surgeons; aged 69; died, Dec. 18, 1936, in the Walter Reed General Hospital, Washington, D. C.

John Alphonse Ragone, Buffalo; University of Buffalo School of Medicine, 1904; member of the Medical Society of the State of New York; associate in pediatrics at his alma mater; was medical director of the Children's Aid Society of Buffalo and Erie County; on the staffs of the City Hospital, Columbus Hospital and the Buffalo Hospital of the Sisters of Charity, Buffalo, and the J. N. Adam Memorial Hospital, Perrysburg, N. Y.; for many years in charge of the Children's Aid Clinic in the Children's Hospital; formerly attending physician at the Buffalo Orphan Asylum, the Crippled Children's Guild and the Fitch Creche Day Nursery; aged 57; died, Dec. 25, 1936, of coronary occlusion.

Martin Rehling ● New York; University of the City of New York Medical Department, 1894; formerly associate professor of surgery, New York Post-Graduate Medical School, Columbia University; fellow of the American College of Surgeons; at various times on the staffs of the New York Post-Graduate Hospital, Flower Hospital, Lenox Hill Hospital, the Sydenham Hospital and Bronx Hospital; aged 70; died, Dec. 1, 1936, of cerebral hemorrhage.

Reginald McCreery Rawls, New York; Bellevue Hospital Medical College, New York, 1898; member of the American Gynecological Society and the Medical Society of the State of New York; fellow of the American College of Surgeons; aged 63; served in various capacities on the staff of the Woman's Hospital, where he died, Dec. 30, 1936, of aneurysm of the aorta and cardiovascular disease.

Charles Douglas Kayser, Mount Vernon, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; formerly assistant professor of anatomy at the Fordham University School of Medicine, New York; served during the World War; aged 60; on the staff of St. Joseph's Hospital, Yonkers, where he died Dec. 31, 1936, of cerebral thrombosis and arteriosclerosis.

George David McGregor ● Charlotte, N. C.; University of Virginia Department of Medicine, Charlottesville, 1925; formerly secretary of the Mecklenburg County Medical Society; on the staffs of the Nalle Clinic, St. Peter's Hospital and the Mercy Hospital; aged 35; was found dead, Dec. 9, 1936, of injuries received in an accidental fall from a window.

William Easley Morris, Mount Kisco, N. Y.; University of Texas School of Medicine, Galveston, 1927; member of the Medical Society of the State of New York; aged 38; on the staff of the Northern Westchester Hospital, Mount Kisco, and the Grasslands Hospital, Valhalla, where he died, Dec. 9, 1936, of streptococcic meningitis with brain abscess.

Henry G. Sandlin, Richmond, Ky.; University of Louisville Medical Department, 1893; member of the Kentucky State Medical Association; past president of the Madison County Medical Society; for many years chairman of the board of education and county board of health; on the staff of the Pattie A. Clay Infirmary; aged 67; died, Dec. 20, 1936.

James Knox Smith ● Texarkana, Ark.; Medical Department of Grant University, Chattanooga, Tenn., 1903; member of the State Medical Association of Texas; fellow of the American College of Surgeons; on the staff of the Michael Meagher Memorial Hospital; aged 58; died, Dec. 28, 1936, of injuries received in an automobile accident.

Frank Sherman Hough, Sibley, Iowa; Michigan College of Medicine and Surgery, Detroit, 1890; member of the Iowa State Medical Society; past president of the Osceola County Medical Society; served during the World War; medical superintendent and owner of the Sibley Hospital; aged 71; died, Dec. 3, 1936, of diabetes mellitus.

Theodor Schapa ● Chicago; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1920; served during the World War; on the staffs of the Alexian Brothers' Hospital and the Evangelical Deaconess Hospital; aged 46; died, Dec. 11, 1936, of cirrhosis of the liver, gastric hemorrhage and pneumonia.

Joseph P. Pecival ● Berwyn, Ill.; John A. Creighton Medical College, Omaha, 1896; for many years connected with the Cook County Psychopathic Hospital, Chicago; formerly superintendent of the State Hospital, Norfolk, Neb., and the Chicago State Hospital; aged 71; died, Dec. 27, 1936, of bronchopneumonia.

Hugh Arthur Grant ● Potsdam, N. Y.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1892; president of the board of Potsdam State Normal School; aged 66; on the staff of the Potsdam Hospital, where he died, Dec. 16, 1936, of cardiac decompensation and cerebral hemorrhage.

Samuel Louis Friedman, Brooklyn; Long Island College Hospital, Brooklyn, 1914; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; on the staffs of the Cumberland Hospital and the Beth-El Hospital; aged 57; died, Dec. 26, 1936.

Elam Albert Reeves ● Kansas City, Kan.; University Medical College of Kansas City, 1903; past president and secretary of the Wyandotte County Medical Society; served during the World War; on the staffs of the Bethany and Providence hospitals; aged 65; died, Dec. 5, 1936.

Melville F. Miller ● Wadsworth, Ohio; Western Reserve University Medical Department, Cleveland, 1892; past president of the Medina County Medical Society; on the staff of the Wadsworth Municipal Hospital; aged 71; died, Dec. 19, 1936, of cerebral hemorrhage.

Robert Lovell Samuel, Maysville, Ky.; University of Louisville Medical Department, 1920; member of the Kentucky State Medical Association; city physician and member of the board of education; on the staff of the Hayswood Hospital; aged 48; died, Dec. 11, 1936.

William Aloysius McGowan, Richmond, Va.; Medical College of Virginia, Richmond, 1897; member of the Medical Society of Virginia; served during the World War; aged 61; died, Dec. 7, 1936, in the Veterans Administration Facility, Washington, D. C.

Robert Hurst Snowden ● Buchanan, Mich.; Northwestern University Medical School, Chicago, 1906; past president of the Berrien County Medical Society; served during the World War; aged 57; died, Dec. 19, 1936, in the Epworth Hospital, South Bend, Ind.

William B. Eicher, Peoria, Ill.; Keokuk (Iowa) Medical College, 1898; member of the Illinois State Medical Society; aged 67; died suddenly, Dec. 7, 1936, in the Illinois Central Hospital, Chicago, of suppurative diverticulitis and multiple liver abscesses.

Albert Monroe Miller, Holliston, Mass.; Dartmouth Medical School, Hanover, N. H., 1882; at one time member of the board of health of Needham, health officer and school physician; aged 79; died, Dec. 1, 1936, in the Glover Memorial Hospital, Needham.

Donald Kendrick Woods ● San Diego, Calif.; Rush Medical College, Chicago, 1913; member of the American

Academy of Pediatrics; served during the World War; aged 46; died, Dec. 10, 1936, in the Good Samaritan Hospital, Los Angeles.

Clarence Lucias Miller, Topeka, Kan.; Ensworth Medical College, St. Joseph, 1905; veteran of the Spanish-American and World wars; state registrar of vital statistics, state board of health; aged 59; died, Dec. 10, 1936, of tuberculosis of the lungs.

Francis Joseph Jones ● Providence, R. I.; Harvard University Medical School, Boston, 1902; on the staffs of St. Joseph's and Providence Lying-in hospitals; aged 59; died, Dec. 17, 1936, in the Butler Hospital, of cerebral thrombosis.

Joseph Franklin Ruff, Clearwater, Fla.; Tulane University of Louisiana Medical Department, New Orleans, 1901; aged 63; on the staff of the Morton F. Plant Hospital, where he died, Dec. 7, 1936, of coronary thrombosis and paralysis agitans.

Henry V. S. Stout, Livingston, N. J., Hahnemann Medical College and Hospital of Philadelphia, 1893; formerly on the staff of the Homeopathic Hospital, East Orange; aged 81; died, Dec. 4, 1936, of cerebral hemorrhage.

Lynn Rogers, Lafayette, Ind.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1907; also a lawyer; served during the World War; aged 59; died, Dec. 2, 1936, of coronary obstruction.

Bernie F. Jungkind, Beebe, Ark.; College of Physicians and Surgeons, Little Rock, 1909; aged 54; died, Dec. 15, 1936, in the Veterans Administration Facility, Hines, Ill., of epithelioma of the nasopharynx.

Bonaventura De Rosa, Portland, Ore.; Regia Università di Napoli Facolta di Medicina e Chirurgia, Italy, 1897; aged 68; died, Dec. 17, 1936, in the Good Samaritan Hospital of cardiovascular renal disease.

Berthier Whitford Mather, Boise, Idaho; Albany (N. Y.) Medical College, 1899; member of the Associated Anesthetists of the United States and Canada; aged 64; died, Dec. 13, 1936, of myocarditis and uremia.

William Wilkins Kain, Cape May, C. H., N. J.; Jefferson Medical College of Philadelphia, 1893; member of the Medical Society of New Jersey; also a druggist; aged 80; died, Dec. 14, 1936, of lobar pneumonia.

Samuel Sleath, Ambler, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1904; on the staff of the Abington (Pa.) Memorial Hospital; aged 62; died, Dec. 7, 1936, of cerebral hemorrhage.

James Francis Cuddy ● Athol, Mass.; Baltimore Medical College, 1905; medical examiner in the Worcester North District and member of the school committee of Athol; aged 54; died, Dec. 3, 1936.

John C. Robinson, Henryetta, Okla.; St. Louis College of Physicians and Surgeons, 1890; member of the Oklahoma State Medical Association; aged 70; died, Dec. 9, 1936, of carcinoma of the throat.

Sidney A. Majure, Hickory, Miss.; Medical College of Alabama, Mobile, 1889; member of the Mississippi State Medical Association; aged 75; died, Dec. 8, 1936, of cardiovascular renal disease.

Thomas Jefferson Griffith, Washington, D. C.; University of Louisville (Ky.) Medical Department, 1873; for many years in the Surgeon General's Office of the Army; aged 85; died, Dec. 4, 1936.

Henry Grover Kurz ● Chicago; Chicago College of Medicine and Surgery, 1909; aged 52; died, January 7, in the Dante Hospital, San Francisco, of rupture of a dissecting aortic aneurysm.

Arthur L. McInnis, Enid, Okla.; St. Louis College of Physicians and Surgeons, 1909; member of the Oklahoma State Medical Association; aged 53; died, Dec. 2, 1936, of pneumonia.

Mathias Schmitz ● Denville, N. J.; University of Buffalo School of Medicine, 1884; house physician at St. Francis Health Resort; aged 72; died, Dec. 1, 1936, of cerebral hemorrhage.

John Edward McCabe ● Providence, R. I.; Tufts College Medical School, Boston, 1914; aged 51; on the staff of St. Joseph's Hospital, where he died, Dec. 13, 1936, of heart disease.

Xerxes A. Jones, Detroit; University of Medicine, Indianapolis, 1898; member of the Michigan State Medical Society; aged 61; died suddenly, Dec. 4, 1936, of coronary thrombosis.

Charles H. P. Slaughter ● Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1895; aged 62; died, Dec. 25, 1936, of arteriosclerosis and myocarditis.

Almon Nathan Pierce, Lake Charles, La.; Pulte Medical College, Cincinnati, 1884; aged 77; died, Dec. 2, 1936, near Pine Bluff, Ark., of injuries received in an automobile accident.

Ben M. Rosebro, Richmond, Va.; Medical College of Virginia, Richmond, 1908; member of the Medical Society of Virginia; aged 59; died, Dec. 17, 1936, of pneumonia.

Joseph Franklin Starrett ● Bangor, Maine; Medical School of Maine, Portland, 1898; aged 66; died, Dec. 11, 1936, of valvular disease of the heart and acute nephritis.

Albert Henry Gill, Cleveland; Western Reserve University Medical Department, Cleveland, 1901; aged 62; died, Dec. 4, 1936, of lobar pneumonia and pulmonary embolus.

Roland Barker Whitridge, Philadelphia; Harvard University Medical School, Boston, 1883; aged 77; died, Dec. 11, 1936, in the Flagler Hospital, St. Augustine, Fla.

Byron David Henry ● Endicott, Wash.; Jefferson Medical College of Philadelphia, 1897; served during the World War; aged 60; died, Dec. 1, 1936, of coronary occlusion.

B. P. Kimbro, Monticello, Ark.; Gate City Medical College, Dallas, Texas, 1907; aged 72; died, Dec. 28, 1936, in the Mack Wilson Hospital, of carcinoma of the colon.

Fred Le Roy Mattern, Fleetwood, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; aged 56; died, Dec. 10, 1936, of cerebral hemorrhage.

John James Nelson Jr., Columbia, Va.; Medical College of Virginia, Richmond, 1913; served during the World War; aged 48; died, Dec. 3, 1936, of angina pectoris.

John Grass, Denver; Rush Medical College, Chicago, 1873; Civil War veteran; aged 90; died, Dec. 3, 1936, in the Mount San Rafael Hospital, Trinidad, of senility.

John W. Schmelter, Erie, Pa.; Ohio Medical University, Columbus, 1900; formerly county coroner; aged 69; died, Dec. 9, 1936, of cerebral hemorrhage.

Edward Jay Miller, Holyoke, Mass.; New York Homeopathic Medical College and Hospital, New York, 1903; aged 48; died, Dec. 7, 1936, of pneumonia.

Julius Anthony Weigand, Elmhurst, N. Y.; University of the City of New York Medical Department, 1894; aged 68; died, Dec. 15, 1936, of heart disease.

Leon Joseph Lacasse, Manchester, N. H.; Baltimore Medical College, 1904; aged 56; died, Dec. 4, 1936, of disease of the coronary arteries and embolism.

Frank Lincoln Sanders ● Kansas City, Mo.; University Medical College of Kansas City, 1898; aged 70; died, Dec. 17, 1936, of coronary thrombosis.

Oliver Augustus Sprague ● Turner, Maine; Bellevue Hospital Medical College, New York, 1889; aged 72; died, Dec. 15, 1936, of chronic myocarditis.

A. J. McCullough, Checotah, Okla. (licensed in Oklahoma by years of practice); aged 67; died, Dec. 1, 1936, of uremia and prostatic hypertrophy.

Edwin R. Stauffer, Cedar Rapids, Iowa; University of Wooster Medical Department, Cleveland, 1879; aged 87; died, Dec. 4, 1936, of uremia.

Foster Fanning Potter, New York; University of the City of New York Medical Department, 1880; aged 82; died, Dec. 18, 1936, of pneumonia.

Richard Coale Price ● Morgantown, W. Va.; University College of Medicine, Richmond, Va., 1901; aged 60; died, Dec. 2, 1936, of pneumonia.

Fred George Russell ● Milwaukee; Milwaukee Medical College, 1910; aged 64; died, Dec. 6, 1936, of coronary occlusion and diabetes mellitus.

William M. Phillips, Wallace, Va.; University of the City of New York Medical Department, 1870; aged 87; died, Dec. 1, 1936, of pneumonia.

Francis Murray Phillips ● Charles Town, W. Va.; Baltimore Medical College, 1904; aged 65; died, Dec. 9, 1936, of lobar pneumonia.

Charles L. Hopkins, Huntington, W. Va.; University of Maryland School of Medicine, Baltimore, 1887; aged 73; died, Nov. 20, 1936.

Francis Joseph McMahon, Brookline, Mass.; Tufts College Medical School, Boston, 1911; aged 52; died, Dec. 1, 1936, of pneumonia.

William B. Foster, Woodbine, Kan. (licensed in Kansas in 1901); aged 80; died, Dec. 9, 1936, of arteriosclerosis.

Hein Terhorst, Minot, N. D.; Chicago Medical College, 1880; aged 80; died. Dec. 8, 1936, of senility.

Correspondence

RECENT GRADUATES AND DRUG NIHILISM

To the Editor:—The article by Dr. Norman A. David in THE JOURNAL Feb. 1, 1936, page 405, entitled "The Recent Graduate and Drug Nihilism" is one that should appeal to every teaching pharmacologist. It draws attention to the impoverished condition of this subject. The more recent article "The Present Status of Research and Teaching in Pharmacology," by Dr. David and George A. Emerson (THE JOURNAL, Nov. 14, 1936, p. 1599) stimulates me to forward the accompanying discussion, which I am especially free to do from my present position, as pharmacology has been for many years granted equal rights with her usually more fortunate sisters.

A number of years ago, while professor of pharmacology in Halifax, Nova Scotia, I became unfavorably impressed with the amount of poor prescribing, lacking both in fundamental knowledge of the subject and even more frequently in its practical application. Through the courtesy of my friend Dean Bubridge of the Pharmacy School and chairman of the Canadian Pharmaceutical Association, a somewhat similar inquiry concerning the average prescription as reported in Dr. David's article was conducted. About 200 replies were obtained from druggists in Canada who had analyzed the last one or two hundred medical prescriptions on their books. These showed that over 25 per cent were entirely composed of, or contained, proprietary medicines. Town doctors rated higher than country. The age of the prescriber was not obtained but would have been very interesting.

Shortly after, I wrote an article (*Canad. M. A. J.* **18**:565 [May] 1928) in which at least one factor certainly involved in this unhappy condition was discussed, namely, the retained teaching of the degenerated remnants of the old "prescription" which had, or were supposed to have, intrinsic virtues, in place of training young medical men to write an intelligent order in its simplest terms compatible with clarity to his pharmaceutical colleague, attention however being paid to the fact that such an order, however simple, is essentially a responsible one and at any time may have legal significance.

Certain states, however, still ask examination questions which are at least in part based on this out of date type of materia medica, and duty to the student demands that a teacher in such states take cognizance of this fact and prepare his students accordingly. Thus he becomes unwillingly a party in the preservation of some old medical dead wood. However, as pharmacology in the medical school essentially consists of taking medical students around part of the medical tool shops and explaining how to use the tools, it must therefore derive a great part of this energy from the spirit of practice, much as medicine itself does. Thus, it is consistent for the teacher to make the best out of a bad job, as he needs must in practice, and show his students the way over his official hurdles. I am aware that this statement may occasion much adverse comment from some of my colleagues who, quite rightly, insist on the scientific basis of this subject being of paramount importance, especially in a university training; furthermore, that nothing which may assist weaker men in a medical school in their constant efforts to reduce the training to a mere technical status should be encouraged, even by compromise. However, two facts exist: the first, that no medical curriculum is sufficiently long to train fully a student in the science of pharmacology; and the second that human pharmacology can be learned only in the appropriate animal houses, namely, the hospital, clinic, or general practice, with but few exceptions. There is thus a scientific as well as a practical need for close cooperation between the two types of experimental pharmacologists; namely, those who work largely on animals and those who use chiefly human material. To focus then a medical student's attention largely toward human pharmacology encourages him in his studies of this science, as well as rendering his brief stay in the department of greater value to him. Furthermore, I find by experience that as the student realizes for himself the practical difficulties which always exist in the conduction of human experiments he is more willing to consider and avail himself of the advantages of animal experimentation. On the other hand, just as the various branches of applied medicine have their specialists, owing largely to the overwhelming literature in each subject, so must human pharmacology be considered a specialized branch, and for the same reason. In the clinic no one feels ashamed to consult a specialist in eyes, and ear departments exist all the time as separate entities and their staffs teach the students without raising adverse comment. Yet most medical men equally unspecialized strongly resent even a mild implication that their knowledge of human or general pharmacology is not complete. The consequence is that many chairs of pharmacology have been filled with general practitioners who are no more capable of fulfilling the duties of the position than they would as head of the department of surgery. It must also be added that the same criticism can be fairly leveled against men trained in pure science, such as chemistry, holding such positions.

While, then, one small fault lies in the type of examinations set by certain state boards, and with due respect to Dr. David, I might suggest that these are largely in the hands of the older generation who, while unquestionably better trained in materia medica and the application of the now unnecessary Latin [sic] adornments, are less familiar with the pharmacologic behavior of drugs than some of their younger colleagues. A second and more serious difficulty lies in the fact that unsuitably trained persons have been engaged in the teaching of this science. This difficulty, serious enough in all consequence, is nevertheless merely the outcome of one which is of fundamental importance.

Materia medica in the old days was an important branch of medical learning and was, of course, intimately associated with the practice of medicine. Automatically, then, the teacher was accorded respect with his professional colleagues. Materia medica also for the greater part of medical history supplied the methods of treatment and, indeed, still earlier in the dim ages was medicine itself. With the sudden and startling development of medical inquiry beginning with Harvey, the almost fantastic success of surgery—still, however, dependent on pharmacology for its essential possibility, namely, anesthesia, analgesia, disinfectants—and the magnificent advances in pathology, bacteriology and physiology, the high estate of materia medica became overshadowed, ill nourished and even dismembered.

The inevitable process of debunking, which new knowledge ever causes, not only cast mud on the now half-starved, impoverished medical member but even on occasion denied it its proper right to exist.

At the peak of the flood of medical advancement of the last generation was found that great leader of medicine and of men, Sir William Osler, who, imbued with such desire to understand medicine and unable, being human, to be colonel of each and every one of its many companies, not only neglected to help this old, great field of endeavor, but also, though probably unwittingly, became its most deadly enemy, especially in this country. Blinded by the glory and light that differential diagnosis was bringing to medicine, men tended to forget that the patient still needed comfort and help exactly as he did before. Because knowledge failed and because drugs were still

crude and thus intrinsically uncertain in action, and their use frequently improperly conducted, the subject became neglected and even damned by this great leader of medicine.

Jibes were cast at drugs, jibes that now come back as boomerangs to their source. Even such fantastic tales as the age old use of pregnancy urine, sneered at, laughed at and cast out of decent medicine as a disgusting anathema, now reappears as a highly valuable source of most potent, and at that time undreamed of, remedies. About the same time, however, as these things were occurring, and practically unnoticed, was born another daughter to this old queen of medicine. In a quiet little German town Schmiedeberg, following the lead of his master, was laying the foundations of pharmacology, which quite as much as any medical subject—though less spectacularly—has in a few short years become not only an entity but actually a leader. From the time of Lister up to this day, surgery has conferred such benefits on the patient and his harassed and sometimes desperate medical adviser that it has appeared not only to the public but even to the profession itself a logical leader and therefore is entitled to wear the kingly crown of its empire. As I had the honor to express to the late Lord Moynihan some years ago, I would remind the profession and especially my colleagues in surgery that this great tree, warmed by the sun of human necessity, really draws its sustenance from the soil of physiology and with the increased knowledge of function will lose most of its present overwhelming luxuriance. Tumor, for example, which today is the source of so much surgical endeavor, will, and God willing soon, be as much a part of surgery as gummas now are.

Pharmacology, however, unlike surgery, was less spectacular in its immediate appeal. The gigantic growth of more immediate human subjects forced this daughter to become, as it is still largely, the poor little Cinderella of medicine.

Yet even in 1906 Cushny, giving detailed evidence before the Royal Commission for three days, proved with chapter and verse—and how he must have wearied the court—that every drug, bar one (pilocarpine), for the previous twenty-five years had entered medicine through the pharmacologic portals. Since that time, thirty years ago, there have been no therapeutic substances of any value which have been introduced into use except by such experimentation. Furthermore, as my former colleague Dr. Sillar of Edinburgh aptly pointed out, pharmacology has rid its humble house of much superfluous dust.

In place, however, of paying homage to this active and brilliant offspring of its old mother, who has already conferred on man in a few short years such bodies as arsphenamine, anesthetics, local anesthetics, hypnotics, diuretics and new antiseptics, to name but a few substances in everyday use and more recently has shown that all processes in the body are probably controlled by drugs—even the nerve impulse itself ends as a pharmacologic action—medicine, as led by such great and human gentlemen as Osler, still throws its muddy tributes at the now dissected body of materia medica, and to some the now infamous "ten drugs" are yet a reality.

Can it be wondered at, then, that the younger men on the one hand, brought up in an atmosphere hostile to the old materia medica and while without personal bitterness, regarding the old type of prescription more of historical interest than practical value, and, personally observing the poor physical status of the pharmacologic departments, and, in their clinical years hearing of the distrust in which this subject is frequently held, and even still worse of being compelled to order drugs by a number, or proprietary mixtures, frequently of unknown composition, by their clinical superiors—can it be indeed wondered at that these young men escaping from such chaos fall easy victims to the guiles of the commercial houses, especially when in some cases these actually make a really honest effort to help them by the publication and presentation of convenient books designed especially for their use, or by the manufacture of preparations easy to prescribe and easy for the patient to take? Can one indeed blame the younger men for prescribing Darke & Lillicome's preparation, knowing it to be a decently made compound, when he is virtually unable, by the break in his own proper training, to prescribe a suitable mixture and fears to try in case he makes a fool of himself.

The perpetuation of therapeutic nihilism and of chaos will continue until proper coordination once more takes place between the basic science and the clinic, and reasonably well trained pharmacologists teach the practical applications of their science. It cannot be too often repeated that a prescription for a disease is useless, for while classic treatment of classic disease is a theoretical ideal, classic disease occurs so rarely in practice that it arouses much interested comment when it does. The doctor, then, has the privilege of giving orders for the treatment of William Brown, who has "bad legs," or of Johnny Jones, who has measles, but he has not yet in these days won the regal privilege of writing prescriptions for "cases" of disease. Medicine and pharmacology have not yet advanced that far, and those who speak glibly or largely of the treatment of "cases" and carry this out in their own practice are either ignorant, careless or lazy medical men. In mass medicine, which sometimes because of economic or other factors exists, short cuts or average methods of treatment are better than none at all; but to lose sight of the sick human being in the treatment of his disease is medicine conducted on its lowest scale and is justifiable only in cases of emergency.

Surgery cannot be learned from books and the lesson that should be derived from the offspring of pharmacology—anesthetics—seems never to be assimilated, that drugs, as well as knives, require judgment and experience to use.

In pharmacology with its copartner physiology now to thinking men lies the real hope of controlling and treating animal and human disease. Yet still in many schools this subject is a rather disrespected subdivision of some other overworked department. Until very recently, but now happily corrected, one of the greatest schools in this country and in the world had no department of pharmacology. Another school and an unusually wealthy one still does not have. There are individuals posing as professors of therapeutics who could not pass an honors paper in the elementary knowledge of the drugs they . Sadly enough there are also individuals who could not intelligently give advice in the practical application of the subject he is supposed to teach.

A good pharmacologist is naturally very close to medicine and only a relatively few hardy spirits have remained faithful to their first but poor love, for only next door is the tempting land of medicine, flowing with the milk and honey of opportunity, filled with the romantic calls of maidens in distress and lighted by the sun of human glory. He has even the knowledge that, should his luck strike gold from the rock of knowledge, roving bandits will most efficiently invade his domain and carry off the booty to become highly paid specialists and experts. Perhaps I have colored this picture somewhat vividly, yet the facts remain and are well enough known to pharmacologists. Therefore, when one reads that the pitiable condition of this great subject is actually attracting attention can you wonder that I rejoice? Can you wonder, then, that I hope that a differential diagnosis, respectfully made in the spirit of Osler, of the condition may receive consideration and that the Council on Medical Education and Hospitals will see fit to prescribe that this member of the medical group shall receive its proper supply of nourishment and vitamins and that it must no longer be considered the kitchen slut among her better favored sisters in her mother's house? Heaven knows I am no Prince Charming to lead a Princess, but even the

humblest mongrel can snarl and bite in the service of his mistress, and love takes no account of palaces.

To Dr. David, then, I and all pharmacologists owe a debt of gratitude for ably bringing into the light of day his data, and it is to be hoped that his work, aided by the Council, will grow and develop to a proper fruition.

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of Tennessee College of Medicine.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BLOOD SEDIMENTATION TESTS

To the Editor:—What is the present status of the blood sedimentation test as compared with the leukocyte count (total and differential, including "stab" count) in the diagnosis of chronic and acute infections? In what circumstances is it especially valuable? What is the technic? Please omit name.

M.D., California.

ANSWER.—The blood sedimentation is more rapid in disease than in health, but this test is not diagnostic of any one disease. The sedimentation test is useful in differential diagnosis. It is of value in following individual cases. In tuberculosis the increased rate parallels the increase in activity. A normal or slowed sedimentation rate speaks against infection.

The sedimentation velocity is accelerated in active tuberculosis, acute inflammations, infectious diseases, carcinoma, pregnancy and rheumatoid arthritis, and following operations as a result of tissue trauma. In general the rate remains increased after the leukocyte count and temperature have returned to normal.

The chief value of the sedimentation test is in distinguishing between inflammatory and noninflammatory processes and in estimating the activity or progress of pulmonary tuberculosis. In acute inflammations the rate is increased. An actively growing cancer is likely to give a greater rate than a slowly growing scirrhous carcinoma. There is usually an increase in serum globulin and fibrinogen in conditions with rapid sedimentation.

Leukocytic changes are more valuable indicators in the early stages of disease than they are in marking the completion of recovery. The cell sedimentation rate usually tells more regarding end stages of disease. The sedimentation test shows more constant deviation from normal than does the Schilling count in acute and subacute pelvic infections.

The reaction of the leukocytes is somewhat specific for certain types of infection, but the tissue involved plays a part. Infections due to cocci give rise to a leukocytosis by causing an increase of polymorphonuclears. A differential count, special note being taken of the ratio of young or stab forms to mature cells, yields more information than the total count. With severe infections the percentage of young or unsegmented polymorphonuclears increases. Normally there are from 5 to 20 per cent. The pneumococcus produces the greatest leukocytosis. The degree of leukocytosis also depends on the reaction of the individual to a severe infection. If a very toxic infection develops, the leukoblastic bone marrow areas may fail to produce leukocytes even in normal numbers.

Bacillary infections, especially typhoid, paratyphoid, influenza and tuberculosis, rarely produce an increase in the total white blood cell count.

The tissue involved influences the leukocytic picture even more than does the type of organism causing an infection. Diseases involving chiefly the lymphatic tissue (tuberculosis, typhoid and so on) usually have a low total count and a high percentage of lymphocytes. When these infections spread to the bones or serous surfaces there may be a polymorphonuclear cell increase. In diseases with a leukocytosis the blood count usually returns to normal before actual recovery has occurred. A continued leukocytosis suggests rapid extension of the infection.

Hemorrhage into a serous cavity causes a prompt and marked leukocytosis. It begins within two hours and reaches its maximum in from six to ten hours. Many patients with malignant tumors have a leukocytosis resulting from secondary infection or absorption of necrotic tumor tissue. A steadily increasing count suggests rapid growth or metastases.

There are so many modifications of the sedimentation test that it is difficult to compare results. Three methods are chiefly used: the Cutler method, the Westergren method and the Linzenmeier method. Corresponding values for the three methods are discussed by Esther M. Greisheimer, A. E. Treloar and Mary Ryan (*Am. J. M. Sc.* **187**:213 [Feb.] 1934).

The simplest of the three methods is the Linzenmeier, which is performed thus: Into a sterile 1 cc. syringe draw 0.2 cc. of sterile 5 per cent sodium citrate and then blood from the vein up to 1 cc. Place in a special tube (5 mm. internal diameter with a 1 cc. graduation mark at 50 mm. height, and two other marks at 12 and 18 mm. below the 1 cc. mark). Mix and set in a vertical position. Record the time when the cell column reaches the 18 mm. line. This is normally about two hours or longer. The normal sedimentation in one hour is from 2 to 10 mm. in men and from 2 to 15 mm. in women.

All three methods are described in the Synopsis of Clinical Laboratory Methods by W. E. Bray, St. Louis, C. V. Mosby Company, 1936. This small book is one of the best and most up-to-date laboratory manuals.

MYASTHENIA GRAVIS

To the Editor:—At present I am giving a 17 year old white girl a half grain (0.03 Gm.) of ephedrine in divided doses and one package of gelatin daily in the treatment of a case of myasthenia gravis. The patient has been under this treatment only a week but seems to have gained strength already. The paralysis of the muscles of deglutition is not so marked and she has better control of the eyelids. When first seen the girl could not talk but had to communicate with me through writing. Is glycerin, strychnine, epinephrine, solution of posterior pituitary or high voltage roentgen therapy over the thymus advisable? What form of treatment has proved most satisfactory? Were heavy doses of quinine sulfate contraindicated for tertian malaria in this case? The patient received 30 grains (2 Gm.) daily for five days. They were only the usual quinine therapy sequelae. Please omit name.

M.D., Arkansas.

ANSWER.—If there is enlargement of the thymus gland, demonstrable by roentgen examination, high voltage roentgen therapy might be worth trying. In other cases the administration of thymus gland has been advised. The other remedies mentioned are merely of possible symptomatic value. So is more recently advocated prostigmine (a derivative of physostigmine), which in doses of 0.05 mg. may whip a patient through a crisis. The therapy employed is essentially correct except that a more adequate supply of aminoacetic acid is indicated. The dosage of Aminoacetic Acid, N. N. R., is 20 to 30 Gm. daily. Gelatin contains only 25 per cent of aminoacetic acid. There is no reason to believe that the quinine therapy aggravated the condition.

SOLUTION FOR USE AS SKIN DISINFECTANT

To the Editor:—Would it be advisable to use a solution of mercury bichloride 1:3,000 in 50 per cent alcohol and 10 per cent acetone as an inexpensive bactericidal substance to be painted on very small areas of skin previous to inserting a hypodermic needle for injections? Such a solution represents an important saving over the expense of the ordinary antiseptic solutions. Is there anything harmful about it? Is it bactericidal for ordinary skin organisms? Do you know of any substance that may be added to it to color it, which will not be precipitated by the mercury bichloride?

NORMAN J. KILBOURNE, M.D., Los Angeles.

ANSWER.—Clinical experience with the following solution, similar to the one described in the query, was recently reported by J. A. Vaichulus and Lloyd Arnold (Compound Colored Alcoholic Solution of Mercuric Chloride for Skin Disinfection, *Surg., Gynec. & Obst.* **61**:333 [Sept.] 1935):

Ethyl alcohol (95%)	525.0 cc.	50.0 %
Acetone U. S. P.	100.0 cc.	10.0 %
Mercury bichloride	1.0 Gm.	0.1 %
Hydrochloric acid	7.5 cc.	0.75%
Chrysoidin Y	2.0 Gm.	0.2 %
Distilled water	367.5 cc.	.....

The authors were able to prepare the solution for $1.60 a gallon. They stated the price of tincture of iodine U. S. P. to be $4.02 a gallon, 3 per cent of tincture of iodine $2.65 a gallon and tinctures of metaphen, of merthiolate and of mercurochrome very much higher. They found it more efficacious than other solutions commonly used for antisepsis and skin sterilization (phenol coefficients: compound alcoholic solution of mercury bichloride colored 357, tincture of iodine 128, tincture of metaphen 57, tincture of merthiolate 83, tincture of mercurochrome 1.8). They note its use in 300 cases of gunshot wounds, automobile accidents and "other similar emergency hospital cases" as well as in cases of neck surgery and 120 cases of abdominal surgery. The authors state that the reports were

favorable, no infections followed its use, and the nonirritating properties were commented on by the surgeons using the solution.

These results are surprising, since it would seem reasonable to expect some toxic effects when a 1:1,000 mercury bichloride solution is used in open wounds and even on moderately large areas of intact skin. The inherent danger of this low concentration could be lessened with further dilution, but the optimum for effectiveness and relative safety would be difficult to determine. It must be remembered that the use of effective concentrations of mercuric chloride is not new but its toxicity has given rise to preferences for the less irritating mercurial tinctures. It has been stated that alcohol enhances the disinfectant action of aqueous solutions of mercury bichloride but it has also been claimed that alcohol increases the absorption; hence the toxicity of the solution.

It cannot be definitely stated that the solution proposed by the inquirer would be harmless. Probably some individuals would develop skin reactions and, if used over large areas, mercury bichloride poisoning as a result of its application. It is interesting to note in connection with the question of precipitation of color that the authors encountered a precipitate in this solution. They found that it could be avoided by the use of a specially purified chrysoidin X.

Vaichulus and Arnold noted that it was necessary to keep their solution tightly stoppered and recommended the following modification for practical purposes:

Ethyl alcohol (95%)	600 cc.
Acetone U. S. P.	200 cc.
Mercury bichloride	1 Gm.
Hydrochloric acid (concentrated)	10 cc.
Chrysoidin Y	2 Gm.
Distilled water, q. s. ad	1,000 cc.

A member of the Council on Pharmacy and Chemistry who was consulted wrote that work not yet published indicates that another similar solution (Harrington's solution):

Commercial alcohol (94%)	640.0 cc.
Hydrochloric acid (strong commercial)	60.0 cc.
Water	300.0 cc.
Mercury bichloride	0.8 Gm.)

is not an efficient skin disinfectant and that when used on the skin it forms a coating which acts as a glove, preventing the giving off of bacteria from the skin but retaining live bacteria within and beneath the coating. For this reason, this and similar preparations would seem to be unsuitable for use when the skin is to be incised or punctured by a hypodermic needle. It must also be borne in mind that the mercurial disinfectants are rather slow in action and within a limited period are bacteriostatic rather than germicidal.

RELIEF OF STERILITY AFTER SALPINGECTOMY

To the Editor:—A woman, aged 25, who had a bilateral salpingectomy five years ago, necessitated because of a gonorrheal infection, has since remarried and is desirous of having children. She has enjoyed perfect health since her operation. The pelvic examination is normal except for the absence of the tubes. The tubes were probably removed close to the uterus, though no roentgenograms of a transuterine injection have been made to determine the extent of the tube remnants. Is there any type of plastic operation that might be done to reestablish the possibilities of pregnancy for this patient? Please omit name. M.D., Georgia.

ANSWER.—The first thing to be done is to make certain that the present husband is capable of procreation. This, of course, may easily be determined by an examination of his semen. If the latter is satisfactory, a hysterogram should be made by the injection of iodized oil into the uterine cavity. This not only will reveal the size and shape of the uterine cavity but also it may indicate the size of tubal stumps if one or both are present. Regardless of whether or not portions of tube exist, an operation may be done to try to overcome the patient's sterility. However, before operating, it is important to point out to both husband and wife that the chances for a pregnancy are not great and that not infrequently when a gestation does take place a miscarriage results. If the patient and her husband agree to an operation after obtaining this information, a laparotomy should be performed. If there are no remains of either tube, one uterine cornu should be removed and half of the ovary on the corresponding side, still attached to its pedicle, should be implanted over the opening thus made in the uterus. The same procedure should be carried out on the opposite side if both ovaries are healthy. The details of this operation are given by W. L. Estes Jr. (*Surg., Gynec. & Obst.* **38**:394 [March] 1924). In a series of fifty cases only four women (8 per cent) became pregnant and only two of these had full term babies.

If tubal stumps are present but there is an obstruction at the uterotubal junction, as demonstrated before operation by the hysterogram or more certainly at the time of operation by making an opening in the distal end of the tube and blowing air into the tube with a Luer syringe, the entire tubal stumps must be removed with a portion of the uterine cornu. Following this, half of each ovary should be implanted over the uterine cornu. If, however, portions of each tube are present and there is no obstruction at the uterotubal junction, all that is necessary is to perform the operation known as salpingostomy. The simplest form of this operation consists of slitting open the tubal stump all the way to the cornu and with very fine catgut suturing the tubal mucosa to the serous covering of the tube. After this is accomplished, air should be blown through the new opening into the uterine cavity to make sure of a free passage. Then a few strands of catgut should be led through the open tube into the uterine cavity on each side and left at the uterotubal junction to maintain these openings. In all plastic operations on the tube, great gentleness must be exercised and all bleeding must be checked before the abdomen is closed. When salpingostomy is performed there is not only the increased possibility of abortion but also, and more serious, a definite hazard of tubal pregnancy. In the cases in which a salpingostomy has been performed, a Rubin test or a hysterosalpingogram should be made a few weeks after operation to determine whether the new openings in the tubes are permeable to air or iodized oil.

In general it may be said that a review of the literature concerning plastic operations on the tubes and uterus to overcome sterility does not present a favorable picture for these operations. The chief reasons for this are the relatively few live babies secured by these measures, the disproportionately high number of ectopic pregnancies that have resulted, and other complications that may follow such operations.

PERSISTENT VAGINAL DISCHARGE

To the Editor:—I am writing you concerning a woman who consulted me some five years ago about the following pelvic lesion. At that time, at the age of 31, she had just married and noted some months afterward a severe itching and dryness of the vulva and vagina. This was followed by a profuse yellowish mucopurulent discharge of foul odor. Being from a prominent family, she hesitated to consult a physician until some six months later, when she presented herself at this office. I immediately referred her to our leading gynecologist. Since that time he has had other gynecologists see her. The treatment to date has been the following: 1. Douches of sodium perborate, mercury bichloride, metaphen, silver. 2. Vaginal suppositories of merthiolate and so on. 3. Solutions of dyes, as methylene blue and acriflavine. 4. Dilation and curettage, with cauterization of the cervix. 5. Autogenous vaccines made from the discharge (diphtheroid, B. coli, atypical forms of staphylococcus and streptococcus). She has been allowed many rest periods from all treatment. At the present time she is no better. The discharge is copious and of very offensive odor. She has worn a pad for the past five years. She has shunned society and has been practically an invalid since that time. Will you please give me some suggestions as to the type of treatment that should now be instituted or refer me to some gynecologist to whom I may take her. Please do not publish my name. M.D., Ohio.

ANSWER.—Although no specific mention is made of the gonococcus, Trichomonas vaginalis and monilia, it is assumed that none of these organisms have ever been found on microscopic examination of stained slides or hanging drops. If hanging drop examinations have not been made this should, of course, be done without delay. Although the local treatments have had little effect attention is called to Hitchings reports of the successful treatment of a case of chronic vaginitis with phenylmercuric nitrate in THE JOURNAL for Jan. 19, 1935 (p. 212). The insufflation of compound silver picrate powder has been advocated by some clinicians for the treatment of trichomonas vaginalis vaginitis. The patient should be instructed to avoid fecal contamination of the introitus to prevent reinfection. At the beginning of the trouble the patient complained of itching and dryness of the vulva and vagina. These complaints occur rather frequently at or beyond the menopause and are associated with "senile vaginitis." In these elderly women, repeated injections of estrogenic substance have proved to be most helpful in many cases. This changes the character of the vaginal mucosa and relieves the symptoms. It may be worth while to give this patient 2,000 international units of estrogenic substance (theelin, amniotin) daily for a few weeks. In addition, a small amount of thyroid substance should be taken daily. The urine should be tested for sugar—a common cause of pruritus vulvae. Perhaps also a vacation away from the patient's present surroundings will help. She should, however, make a strenuous effort to avoid thinking of her present plight and she should become interested in some form of activity. The state of mind and the constitution of an individual may be factors in the persistence of a nonspecific vaginal discharge.

TEMPOROMANDIBULAR ARTHRITIS

To the Editor:—A man, aged 28, complains of pain in the region of the right temporomandibular joint when he attempts to close his jaw. Something in the joint itself, he says, obstructs the closure. By placing his head so as to stretch the right sternocleidomastoid muscle and then by slow and slight lateral motion of the jaw, he feels (and hears) the "obstruction" slip smoothly out of the way, allowing the jaw to close. Attempts to close the jaw abruptly are unsuccessful and painful. I can feel nothing abnormal on placing my fingers against the jaw when this "slipping" occurs. The trouble is found only in closing the jaw the last few millimeters; no trouble is found in opening it. With the jaw completely closed, no pain is felt as the teeth are clenched or unclenched. Increased pain and difficulty in closing the jaw and a sensation of swelling in the "obstruction" result from the irritation produced by attempts to occlude the teeth. The patient is unable to masticate with his molars, all chewing being accomplished with the incisors. This condition has remained essentially unaltered for two months. Roentgenograms with the jaw in the closed position, taken by a competent roentgenologist, were negative. No ear symptoms, headache, facial pain or change in salivation is noted, and the region of the joint is not tender to palpation either externally or internally. There has been no change in the denture since the removal of the two upper wisdom teeth five years ago. This trouble was first noticed at breakfast the morning after the patient had inadvertently flipped his jaw sidewise while he was throwing stones. Physical examination shows the patient in otherwise perfect health. I would appreciate any suggestions as to procedure in diagnosis or treatment. Please omit name.

M.D., New York.

ANSWER.—In the absence of any direct examination and with the limited information furnished, one would be strongly inclined to make a diagnosis of traumatic temporomandibular arthritis. This condition is by no means uncommon and is frequently overlooked. The tenderness is brought about by a sudden stretching of the capsule with a coincident traumatizing of the meniscus muscle. The treatment is simple and consists in giving the joint rest without immobilization. The patient should be carefully instructed to avoid any unusual movement of the jaws during the waking hours, and to avoid yawning and particularly opening the mouth wide in eating or laughing. In other words, the jaw should be kept within moderate excursions at all times. At night the patient should be instructed to wear a bandage from the chin to the head, which will prevent any undue movement during the hours of sleep. This simple treatment should be carried out for a period of several months, eight or ten as a minimum. This will give the capsule time to contract to its normal limits, and when this is accomplished there should be no further trouble. The discomfort will disappear in a week or two after the treatment is begun. The patient should be warned to continue with the management for a protracted period, because with each repetition of the injury the condition becomes increasingly difficult to cure.

DIAGNOSIS OF HEARING IMPAIRMENT

To the Editor:—A woman, aged 36, has been a telephone operator for eighteen years. Her hearing has been impaired for the past six months and she thinks it is due to her occupation. She can hear the spoken voice at 10 feet in the right ear and at 16 feet in the left ear. The Rinne test is negative in both ears; the Weber, not localized. The tympanic membranes are opaque and lusterless and have poor markings. I am wondering if her occupation has caused or influenced the deafness. Ballenger states that telephone operators develop an occupational deafness. Please omit name if printed.

M.D., Arkansas.

ANSWER.—So far as the tests in this case are concerned, one cannot judge definitely whether the hearing impairment is due to a lesion in the conduction apparatus or in the perception mechanism. The fact that the tympanic membrane is pale and lusterless would indicate that some involvement of the middle ear or eustachian tube had been present but, of course, that would not preclude simultaneous involvement of the inner ear if such is present. The fact that the Weber test is not lateralized may mean that the two ears are involved to about the same extent. Ordinarily the Weber test is not lateralized with normal ears. With conduction apparatus impairment, the sound is usually lateralized in the worse hearing ear, or, if both have a conduction impairment, in the worse of the two ears. With inner ear involvement the Weber test is usually lateralized to the better hearing ear, or, if both are affected, the fork is heard in the better hearing ear.

Stating that the Rinne test is negative in both ears is not sufficient information for an actual diagnosis. In other words, if the bone conduction is longer than the air and, therefore, the Rinne test is negative but the bone conduction is longer than normal, and the air conduction is considerably shortened as compared with normal, the negative Rinne test means a definite involvement of the conduction apparatus. When the bone conduction is longer than air but both are greatly shortened as compared with the normal, there is usually a combination of the conduction and the perception apparatus.

If in the case cited there is impairment of the conduction apparatus, it does not seem likely that the telephone receiver would cause such a condition. If, on the other hand, there is a very decided nerve involvement, it is possible that the long continued use of the telephone might have been a contributing factor. Few cases have been seen in which telephone operators have had a marked impairment of hearing apparently as a result of their occupation.

"ARTHOX" OR "SULFIODOXYGENIA"

To the Editor:—Referring to the enclosed literature from the Standard Laboratories, will you please advise me whether you have any information regarding the preparation "Arthox" and oblige.

M.D., Virginia.

ANSWER.—According to an advertising circular distributed by the Standard Laboratories, Inc., Boston, in 1935, Arthox is "a scientific medicinal formula," an "analgesic, specially prepared to aid in the relief of the muscular aches and pains of RHEUMATISM AND ARTHRITIS." The circular, which is apparently addressed to the public, gives no hint as to the composition of Arthox but does include numerous anonymous testimonials from physicians and laymen which, in the opinion of the Standard Laboratories, "attest convincingly what you may reasonably expect Arthox to do for you." The general character of these testimonials is well exemplified in the following verbatim copy of one of them:

New York .....Hospital
December 20, 1934

Dr. ..... has been kind enough to give me some Arthox from time to time for use in the clinic. We have had gratifying results in a number of cases in which other methods were ineffective.

(Signed) ....., M.D.

An examination of the advertising material which our correspondent received from Standard Laboratories, Inc., in 1936 indicates that Arthox—now embellished with the high sounding but meaningless synonym "Sulfiodoxygenia"—is sold "on physicians' prescription only." In other words, the "patent" medicine of 1935 becomes an "ethical" specialty of 1936! What are the ingredients of this "most valuable arthritis medicine" which some physicians apparently have taken seriously enough to enable the promoters to state that "additional research work" is being done in various places "including two of Boston's leading hospitals"? The constituents, according to information given by the manufacturer in 1935, are alcohol 2 per cent, Burnham's Soluble Iodine, anise, sassafras, glycyrrhiza, sarsaparilla, methyl salicylate and sodium salicylate! Though this statement includes no information as to the amounts of iodine and salicylate in the mixture, one would probably be justified in assuming that the preparation owes whatever effect it may have in arthritis to the presence of salicylates and, possibly, to the iodine. Apparently the promoters of Arthox (also called "Sulfiodoxygenia") and, sadly enough, some physicians too, are of the opinion that such medication possesses enhanced value when it masquerades under some such title as "Arthox" or "Sulfiodoxygenia." Incidentally, Burnham's Soluble Iodine, one of the claimed constituents of Arthox, is the subject of an unfavorable report by the Council on Pharmacy and Chemistry appearing in THE JOURNAL, July 1, 1933, page 33.

PSORIASIS

To the Editor:—I will appreciate such information as you can give me concerning the treatment of psoriasis by the injection of an emulsion prepared from the scales of the lesions on the individual. I am unable to find much information about this.

M.D., Nebraska.

ANSWER.—Sutherland Campbell and Kendal Frost, in a preliminary report on a new form of therapy for psoriasis (*Arch. Dermat. & Syph.* **22**:685 [Oct.] 1930) detailed observations on fifteen patients with psoriasis who were treated by intramuscular injections of a suspension of the patient's own finely ground psoriatic scales in alcohol. When possible, approximately 0.2 Gm. of psoriatic scales to 20 cc. of pure alcohol was used. The dose employed varied from 1 to 4 cc., the average dose being 1.5 cc., and the injections were given at intervals of three or four days. No untoward local or general reactions were noted. All patients responded to the therapy in varying degrees. The following objective changes were noted:

1. The scales became thinner and less adherent.
2. The center of the lesions became pale.
3. The last stage showed a smooth, slightly discolored area corresponding in size to the original lesion, with a few discrete lesions at the margins. The latter finally disappeared.

Marcozzi (*Gior. ital. di dermat. e sif.* **74**:441 [April] 1933) reported on the treatment of ten patients by this method, six

ambulatory and four hospitalized. In three cases a temporary resolution of the dermatoses was obtained, while in the remainder the results were negative. He comments that the constancy of the relapses on the one hand, and the inconstancy of therapeutic success on the other, exclude the possibility of obtaining an absolute cure.

Wrong (*Brit. J. Dermat.* 45:244 [June] 1933) also reported on a series of ten cases. He weighed his scales and added 1 cc. of sterile physiologic solution of sodium chloride to each 10 mg. of scales. Fifty mg. of scales was injected at one time. He comments that patients must have large plaques of scales in areas suitable for scraping, that it is useless to use the treatment on patients who have shown spontaneous improvement, and that the injections are painful to some patients. One of his patients was treated entirely with scales from another patient, and the condition cleared completely. In his series of ten patients, five definitely improved, one slightly improved, and four showed no improvement.

HEALTH DANGERS OF STREAM POLLUTION

To the Editor:—I have been trying for several years to clean up an unhealthful condition of a brook that runs through the center of Brattleboro for a distance of 3 miles. This brook carries a very heavy deposit of sewage. Many private sewers do not reach the water but deposit the sewage on the banks, where it is dried out by the sun and blown about everywhere. The water becomes very low in the summer, making conditions even more insanitary. Numerous samples of the water have been sent to the state hygiene department, and the return reports stated that the water was highly polluted. I have been told by one of the local physicians that, if I wrote to you, you might be able to give me information with regard to the various diseases that might be contracted from water showing sewage pollution and also some information about the possibility of contracting diseases from air-borne pollution. A prompt reply would be appreciated, as the matter has gone as far as calling a special town meeting to discuss this serious condition.

JASON E. BUSHNELL, Health Officer, Brattleboro, Vt.

ANSWER.—Perhaps the most important health hazard that might result from the pollution of the brook referred to would be the possibility of typhoid fever and amebic dysentery. This would be particularly true if there is any local condition that might permit water from the brook to pollute a source of drinking water.

In some of the areas of the Middle West there have been reports of the transmission of intestinal parasites from animal to animal as the result of pollution of brooks and streams flowing through pastures, and a certain species of mosquito breeds prolifically in sewage-polluted waters; but as a rule these are not the types which transmit disease. There is always a hazard of infection by persons who may use the brook for swimming or bathing. If the polluted brook passes through a golf course, the possibility of infecting caddies and players who may pick balls out of the brook is always present.

The possibility of contracting disease from the air as the result of a polluted brook is considered remote.

TOXICITY OF TETRACHLORETHYLENE

To the Editor:—A patient now working as a cleaner and exposed to heated fumes of perchlorethylene (tetrachlorethylene) has developed nausea, precordial pain, anorexia and inertia. Please advise as to treatment and as to precautions he should take. M.D., North Carolina.

ANSWER.—The extent of toxicity of tetrachlorethylene, $CCl_2:CCl_2$, may be gaged by comparison with the toxicity of carbon tetrachloride. If the toxicity of the latter is rated as 1, tetrachlorethylene may be rated at 1.6; that is, more than 50 per cent more toxic. However, this statement applies chiefly to vapors of tetrachlorethylene. When taken into the body by mouth, under proper conditions little is absorbed and consequently the toxicity is low. This has led to the extensive use of tetrachlorethylene as an anthelmintic.

The symptoms mentioned in the query are consistent with a diagnosis of tetrachlorethylene poisoning. Assuming such a condition to exist, prevention of further exposure is the best form of treatment for these milder cases. Symptomatic treatment may be required, but, in the absence of additional exposure, complete recovery is expectable with or without treatment, and in a short time, such as one week. In connection with treatment, the drinking of milk is helpful.

This worker should not be long exposed to a concentration of tetrachlorethylene vapors of more than 100 parts per million of air. The measurement of these vapors on a quantitative basis is difficult, calling for special equipment such as thermal conductivity apparatus or a combustible gas indicator. It is believed probable that such equipment may be found in the newly created Division of Industrial Hygiene in the State Department of Health in North Carolina.

There is no practical respirator that may be worn with comfort over long periods which will protect workers in chlorinated hydrocarbon vapors. One of the chief requirements in the use of tetrachlorethylene in dry cleaning under conditions that give rise to vapors in the workroom is the installation of exhaust systems at floor levels. Vapors of tetrachlorethylene are considerably heavier than chloroform and build up at lower levels in the absence of evacuation. Completely enclosed dry cleaning systems are preferable when synthetic detergents such as tetrachlorethylene are in use.

KAHN TEST IN SYPHILIS

To the Editor:—A woman, aged 35, with three children, the youngest of whom is 11 years of age and no miscarriages, and with a negative family history, had so-called bronchitis about eighteen years ago. X-ray examination now shows very extensive healed miliary tuberculosis, with some apparent present infection of the respiratory tract. There is no cough or expectoration and the x-ray diagnosis is "no active pulmonary tuberculosis." The patient has been quite weak without apparent reason, unless the weakness is due to the respiratory infection. The urine is normal. Red blood cells number 4,460,000, white blood cells 7,000; the hemoglobin is 70 per cent. The Kahn reaction is one plus; spinal puncture was refused. There are no clinical symptoms of syphilis. Kindly give me your opinion as to the Kahn reaction in absence of clinical symptoms of syphilis. What is the proper procedure? I am giving injections of iron arsenite and also a bismuth compound and cod liver oil capsules, but no potassium iodide so far. How soon should I repeat the Kahn test? After the administration of a bismuth compound, potassium iodide and neoarsphenamine should I consider the Kahn reaction indicative of present syphilis without clinical evidence or history? M.D., Ill.

ANSWER.—A one plus Kahn reaction (or Wassermann reaction), in the absence of clinical evidence or a history of infection, cannot be taken as establishing a diagnosis of syphilis. There is no indication from the data presented that the symptoms shown by the patient are due to syphilis; the data indeed suggest that they might be due to an infection of the respiratory tract. Although the Kahn reaction is recognized to be highly specific for syphilis, a borderline reaction, such as a one plus or plus minus, in the absence of clinical evidence or a history of syphilis cannot be considered as justifying antisyphilitic therapy. A borderline reaction should be looked on as an indicator for further clinical and serologic studies.

TREATMENT OF STRONGYLOIDES INFESTATION

To the Editor:—A man, aged 35, complains of some indigestion and occasional diarrhea. General physical examination is negative except for a mild secondary anemia; the urine is normal. Examination of the stool shows strongyloides. Apparently gentian violet is one of the latest methods of treatment. By mouth the dose advised seems to vary from 30 to 300 mg. If this treatment fails, I notice that one authority advises the simultaneous use of antimony and potassium tartrate intravenously, a total dose of 2.5 Gm., with intermission of a few days between treatments. Another authority advises gentian violet 20 cc., 0.3 per cent intravenously, or even double this dose. There is also the transduodenal instillation of glycerin, magnesium sulfate and hot saline solution. Are there any possible untoward effects from gentian violet (1) by mouth, (2) intravenously, (3) and from antimony and potassium tartrate, and should this be repeated? What is your opinion as to the best method of treatment? SAMUEL L. IMMERMAN, M.D., Philadelphia.

ANSWER.—1. Excessive dosage may produce local irritation, chiefly vomiting and diarrhea.

2. Intravenous injection of the dye in doses of 5 mg. per kilogram of body weight causes marked blueness of the skin, probably chiefly from the intense color of the dye. The color disappears in a few hours. It is also liable to cause "colloidoclastic reactions," such as chills and fever, on intravenous injection, and it is probable that its therapeutic effects when given intravenously are due to this reaction. The concentration of the solution should not exceed 0.5 per cent, as a 1 or 2 per cent solution has a tendency to cause thrombosis.

3. The intravenous use of antimony and potassium tartrate (1 per cent in physiologic solution of sodium chloride, initial dose 0.04 to 0.06 Gm.) is liable to be followed by an irritative cough, a metallic taste, nausea and vomiting, colic, diarrhea, and occasional skin rashes. As it is rather rapidly eliminated, there is relatively little danger of cumulative action, so that repetition at adequate intervals may be safe.

The therapy recommended consists of administration of oil of chenopodium, after a day of magnesium sulfate purgation and light meals. It is given in 0.5 cc. capsules at 7, 8 and 9 o'clock in the morning: a total of 1.5 cc. Two hours later a

purgative dose of magnesium sulfate should be given and the treatment repeated about once a week until all the worms are destroyed. Thymol in doses of from 1 to 3 Gm. is a competitor. Carbon tetrachloride in doses not exceeding 3 cc. is also recommended and is considered by some as superior to the other two.

TRANSMISSION OF SYPHILIS

To the Editor:—A white woman, aged 25, is afflicted with heredosyphilis. In January she sought treatment for a repeated attack of interstitial keratitis. Her Wassermann reaction was 4 plus. I started her on a bismuth compound; then she had a course of neoarsphenamine and is now on her second course of bismuth. The eye condition has cleared up nicely. The Wassermann reaction is still 4 plus. She is a splendid type of individual, quite intelligent and is aware of her condition. She wants to marry and is anxious to know what the possibilities are for transmission to her prospective husband and any possible child. She wants to get married this summer. Should she wait till she gets more treatment? She is quite aware that lifelong observation and intermittent treatment are necessary for the proper care of her disease. Please omit name and address.

M.D., Pennsylvania.

ANSWER.—This patient with congenital syphilis may marry at any time she likes without any risk of transmitting syphilis to her prospective husband. So far as the transmission of syphilis to a possible child is concerned, third generation syphilis does occur but is exceedingly rare. Of 118 children born to eighty-eight congenitally syphilitic mothers in one large clinic of the country, only eight of the children themselves had congenital syphilis. Even these chances may be lessened by adequate treatment of the mother during the course of her pregnancy.

TREATMENT OF SYPHILIS

To the Editor:—A man, aged 25, had a chancre in 1914 for which he received six injections of arsphenamine and was given mercury and iodides by mouth for several months. The four plus Wassermann reaction was changed to negative. He received no further treatment. In 1926 he had a severe attack of coronary thrombosis from which he recovered in about three months. In 1932 he had a similar but milder attack. He has been well since then. Now for the first time he admits a syphilitic history. The Wassermann reaction is one plus. The electrocardiogram shows evidence of myocardial disease. How much antisyphilitic treatment should be administered now?

M.D., New York.

ANSWER.—Coronary occlusion is rarely due to syphilitic heart disease. The slight degree of positivity in the complement fixation test is of no value in estimating the activity or lack of it of syphilitic infection of twenty-two years ago. If the patient has no physical evidence of syphilis, it would be wisest to withhold antisyphilitic treatment altogether. If physical evidence of syphilis is present, either in the form of syphilitic aortitis associated with what is almost surely arteriosclerotic heart disease or of neurosyphilis, antisyphilitic treatment might perhaps be given, although no definite opinion could be offered as to its type without further knowledge of the physical evidence of syphilis, if any, that may be present. Under no circumstances should the patient now be treated merely because of his weakly positive Wassermann reaction. The arsenical drugs are relatively contraindicated in a patient with myocardial damage of this degree.

INJECTION TREATMENT OF BURSAL CYSTS—NEURITIS

To the Editor:—I noted what you had to say in Queries and Minor Notes in THE JOURNAL, June 13, relative to the treatment of hydrocele with 5 per cent sodium morrhuate and wondered whether the same treatment is applicable to bursal cysts, especially in the popliteal space. Also kindly suggest treatment that will cure neuritis of the arm and hand (subacute).

SHERMAN R. WANTZ, M.D., Baltimore.

ANSWER.—Bursae in general are amenable to the injection treatment with 5 per cent sodium morrhuate. Popliteal bursae may widely communicate with the knee joint and their injection may produce a marked inflammatory reaction of the knee. The bursae of the hamstring muscles may be readily injected.

The treatment of neuritis of the arm and hand depends on the thorough investigation of its cause. Traumatic neuritis is caused by pressure of a cervical rib, arthritis of the spine, subdeltoid bursae, old injuries to the shoulder or brachial plexus. Infectious or toxic neuritis may be caused by influenza, typhoid, lead, arsenic, alcohol or carbon monoxide, to mention only the most frequent offenders, as there are many others. Possible foci in the teeth, tonsils, prostate and cervix must be investigated. Rheumatic nodules in the muscles, fibrositis, often simulate brachial neuritis. Symptomatic relief is afforded by salicylates, heat and abduction of the arm in an airplane splint.

EMOTIONAL UPSET PRECIPITATING HYPERTHYROIDISM

To the Editor:—Can a recurrence of acute hyperthyroidism in a case in which there have been no symptoms since thyroidectomy two years previous be precipitated by an emotional upset associated with a trauma? Please omit name.

M.D., New York.

ANSWER.—It is generally believed that an emotional upset associated with trauma may precipitate hyperthyroidism. If this concept is correct, it is also quite probable that an emotional upset associated with trauma might precipitate a recurrence of hyperthyroidism. However, there is no evidence obtainable that permits of drawing a definite conclusion in an individual case.

OPERATION ON LACRIMAL SAC IN INFANT

To the Editor:—I should like to have your version of the best treatment for an infected lacrimal sac, in a child 16 months old, the condition having persisted since birth; the nasal duct is open. What is the general impression regarding removal of the sac at such an early age? Please omit name.

M.D., British Columbia.

ANSWER.—The infected tear sac of an infant of 16 months should be removed through the external route. The nasal drainage operations used in adults are scarcely applicable, the nasal spaces in an infant are so small.

HAGEDORN-JENSEN METHOD OF ESTIMATING BLOOD SUGAR

To the Editor:—With respect to the note on page 2075 of the Dec. 19, 1936, issue of THE JOURNAL, Dr. Selsam is correct in her criticism of the "standardization" as published in the October 24 issue of THE JOURNAL, having to do with the Hagedorn-Jensen method of determining the blood sugar.

Thiosulfate solutions cannot be standardized against iodide solutions for a number of reasons. Two are that the end products of a thiosulfate-iodine reaction are a tetrathionate and an iodide, and that starch-iodide blue appears only in the presence of hydriodic acid or a soluble iodide. These reactions are in no wise matters of feeling but have been known, demonstrated quantitatively and taught to sophomore students of quantitative analysis for many decades. They may be found, fully described, in any standard work in that field, of which Treadwell and Hall's Analytical Chemistry is representative.

An infinitely preferable way of standardization of thiosulfate solutions is described in the sixth edition of Talbot's Quantitative Analysis on pages 78-80, using bromate, copper or arsenous oxide as reference standards rather than the metastable iodate. Use of these methods will make the final analysis of the blood specimen more nearly approach a determination rather than an estimation.

L. F. PIERCE, PH.D., Los Angeles.

EFFECT OF STERILIZATION

To the Editor:—In the Dec. 5, 1936, issue of THE JOURNAL, on page 1912, there is an inquiry by a physician in New York regarding the effect of sterilization on epilepsy. In my experience I have found definite benefit in the treatment of epilepsy associated with menstruation by x-ray suppression of the menstrual function. In the *American Journal of Obstetrics and Gynecology* (30:116 [July] 1935) I reported on the result of treatment in just such a case as described by your correspondent, with excellent results. Recently numerous workers have shown a definite relationship between menstrual function and mental disturbances; x-ray therapy has been of distinct help in such conditions. In cases of epilepsy associated with menstrual function, it may be readily benefited by x-ray suppression of the menses. The question as to temporary or permanent sterilization rests on several factors, not the least important being the age of the patient. In most instances x-ray sterilization in women under 30 years of age is not permanent in effect.

IRA I. KAPLAN, M.D., New York.

HYPERPERISTALSIS WITH BORBORYGMUS

To the Editor:—On page 320 of the January 23 issue of THE JOURNAL, in Queries and Minor Notes, is a question as to the possible etiology of hyperperistalsis with borborygmus. Having seen one such symptom complex in a patient with proved brucellosis, whose symptoms disappeared under vaccine therapy, I would like to suggest the advisability of a blood agglutination test, intradermal test and perhaps an opsonocytophagic index test to rule out possible chronic, subclinical brucellosis.

HAROLD J. HARRIS, M.D., New York.

X-RAY THERAPY IN OSTEOMYELITIS

To the Editor:—On page 1988 of the Dec. 12, 1936, issue of THE JOURNAL I note your answer to a request for suggestions as to treatment for chronic osteomyelitis and was sorry that you did not mention x-ray therapy. I have found x-ray therapy very successful in my practice and believe that its advantages should be better known. In my experience surgery sometimes is followed by an acute exacerbation of the disease, and this is especially true in cases of osteomyelitis of the femur.

WILLIAM A. EVANS, M.D., Detroit.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, February 6, page 498.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* May 10-12, June 21-23, and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country on April 17. *Oral examinations for Group A and B applicants* will be held in Philadelphia, June 7-8. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written* examination will be held simultaneously in different centers of the United States and Canada in March. *Practical* examination will be given in St. Louis in April and at Philadelphia in June. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Rm. 1210, Des Moines.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the United States and Canada, March 6. *Practical, oral and clinical examinations for Group A and B applicants* will be held at Atlantic City, N. J., June 7-8. *Applications must be received at least sixty days prior to the examination dates.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Philadelphia, June 12. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Philadelphia, June 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Chicago, March 26-27. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit, Michigan.

AMERICAN BOARD OF PEDIATRICS: Atlantic City, N. J., June 6. Sec., Dr. C. W. Aldrich, 723 Elm St., Winnetka, Illinois.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: Philadelphia, June. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, N. J., June 4-6. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Oral examination.* Minneapolis, June 25-26. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

New Jersey June and October Examinations

Dr. James J. McGuire, secretary, State Board of Medical Examiners of New Jersey, reports the written examinations held in Trenton, June 16-17 and Oct. 20-21, 1936. Both examinations covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and seventy-four candidates were examined, 168 of whom passed and 6 failed. The following schools were represented:

School	PASSED Year Grad.	Per Cent
University of Arkansas School of Medicine	(1935)	86.1, 87
University of California Medical School	(1936)	84
Yale University School of Medicine	(1934) 84.6, (1935)	83.5
George Washington University School of Medicine	(1934)	85.5, 86.6, 89.5, (1935) 85.5, 87.6, 88
Georgetown University School of Medicine	(1934)	75, 81.2, (1935) 75, 77.1, 77.1, 79.8, 82.1, 83.3, 84.1, 84.8, 85.3, 85.3, 86.4, 86.4, 90.1, 90.5
Howard University College of Medicine	(1935)	82.8, 84.6, 88.8
Emory University School of Medicine	(1934)	80.1
Loyola University School of Medicine	(1935) 87.7, (1936)	80.7
Northwestern University Medical School	(1936)	84.6
Rush Medical College	(1934)	83.8, (1936) 84.7, 88.2
State University of Iowa College of Medicine	(1933)	80.6
University of Kansas School of Medicine	(1934)	83.7
Johns Hopkins University School of Medicine	(1934)	84.8
University of Maryland School of Medicine and College of Physicians and Surgeons	(1935)	79.4, 87.1, 87.3, 88.7, 89.6, 90.2
Boston University School of Medicine	(1935)	80.2, 85, 88.3
Harvard University Medical School	(1934) 91.5, (1935)	84.4, 88.5
Tufts College Medical School	(1931)	79.1, (1934) 83.2, (1935) 77.8
University of Michigan Medical School	(1935)	84.7
St. Louis University School of Medicine	(1935)	81.6, 83.8, 84.3, 86.5, 87.6
Washington University School of Medicine	(1935)	87.2
Creighton University School of Medicine	(1935) 81.6,	82.1
University of Nebraska College of Medicine	(1929)	85.4
Columbia Univ. College of Physicians and Surgeons	(1935)	77.4, 84.4, 85.2, 85.5, 87.1, 88, 88.8
Cornell University Medical College	(1935)	86.8
Long Island College of Medicine	(1932) 91.1, (1935)	84.8, 88.8
New York Homeopathic Medical College and Flower Hospital	(1935) 85.1,	85.5, 88.3
New York University College of Medicine	(1935) 83.3,	90.1
Syracuse University College of Medicine	(1935)	86.8, 87.4, 89, 89.1
University of Rochester School of Medicine	(1935)	82.8
Eclectic Medical College, Cincinnati	(1935)	86.6, 87.1, 88.3, 88.7, 89.3
Hahnemann Med. College and Hospital of Philadelphia	(1934) 83,	83.2, 83.4, 85, 85.6, 85.8, 86.3, (1935) 81, 81.5, 82, 83, 83.3, 83.4, 84.5, 84.6, 84.8, 85.7, 89.6, 90.3
Jefferson Medical College of Philadelphia	(1933)	86, (1934) 87.5, 88.8, (1935) 81.7, 82.4, 82.6, 83.3, 84.2, 84.8, 84.8, 85.1, 85.2, 85.4, 88, 88, 88, 88.8, 89.2, 89.6, 89.7, 90, 90.6
Temple University School of Medicine	(1934)	82.3, 84.3, 89.7, (1935) 80, 82.6, 84, 85.4
University of Pennsylvania School of Medicine	(1934)	86.2, (1935) 81.7, 82.7, 84.6, 86.1, 87.6
Woman's Medical College of Pennsylvania	(1933)	83.4, (1935) 75.8, 83.8
University of Tennessee College of Medicine	(1933)	78.3
University of Vermont College of Medicine	(1935)	83.7
Medizinische Fakultät der Universität Wien	(1934)	86.8*
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	(1934) 80.2,	83.7
University of Birmingham Faculty of Medicine	(1935)	87.3
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg	(1922)	84.1*
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia	(1935)	80.2*
Regia Università di Napoli Facoltà di Medicina e Chirurgia	(1934) 80.7,*	81.3
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons, Edinburgh	(1934)	83
University of Aberdeen Faculty of Medicine, Scotland	(1934)	83.5
University of Edinburgh Faculty of Medicine	(1934)	86.6*
University of St. Andrews Conjoint Medical School, Scotland	(1935) 79.3,*	84.3*
Universität Bern Medizinische Fakultät	(1934) 81.8, (1935)	86.3
Université de Genève Faculté de Médecine	(1935) 78.1,*	86.7
Université de Lausanne Faculté de Médecine	(1934)	77.8*

School	FAILED Year Grad.	Per Cent
McGill University Faculty of Medicine	(1915)	54.7
University of Montreal Faculty of Medicine	(1925)	65.8
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg	(1923)	59.1*
Regia Università degli Studi di Modena. Facoltà di Medicina e Chirurgia	(1927) 51.2,*	63.1*
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia	(1934)	66.1*

One hundred and twenty-nine physicians were licensed by endorsement from January 15 through December 16. The following schools were represented:

School	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
College of Medical Evangelists	(1936)	N. B. M. Ex.
University of Colorado School of Medicine	(1934), (1935)	Colorado
Yale University School of Medicine	(1928)	New York
George Washington University School of Medicine	(1928), (1933)	New York
Georgetown University School of Medicine	(1934)	Maryland
Howard University College of Medicine	(1930) (1934)	Kansas, (1935) Tennessee
Northwestern University Medical School	(1936)	Illinois
Rush Medical College	(1932)	N. B. M. Ex, (1934) Penna.
Indiana University School of Medicine	(1933), (1934, 2), (1935)	Indiana
State University of Iowa College of Medicine	(1933)	Iowa
University of Kansas School of Medicine	(1932), (1934)	Kansas
University of Louisville School of Medicine	(1932)	Kentucky
Tulane University of Louisiana School of Medicine	(1932)	Michigan
College of Physicians and Surgeons of Baltimore	(1905)	New York, (1914) Pennsylvania
Johns Hopkins University School of Medicine	(1924)	New York, (1931), (1934) Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1916)	S. Carolina, (1933), (1934) Maryland
Boston University School of Medicine	(1935)	N. B. M. Ex.
Harvard University Medical School	(1930)	N. B. M. Ex.
Tufts College Medical School	(1926)	Massachusetts, (1930) New York
University of Michigan Medical School	(1932)	N. B. M. Ex., (1929), (1935) Michigan, (1935) New York
University of Minnesota Medical School	(1932)	N. B. M. Ex.
St. Louis University School of Medicine	(1930)	New York, (1933), (1934), (1935) Missouri
Creighton University School of Medicine	(1927)	Nebraska
Columbia Univ. Col. of Physicians and Surgeons	(1934)	N. B. M. Ex., (1923), (1934), (1935, 3) New York
Cornell University Medical College	(1932, 2)	N. B. M. Ex., (1923), (1929), (1932), (1934) New York
Fordham University School of Medicine	(1919)	New York
Long Island College Hospital	(1912), (1921), (1925), (1929)	New York
Long Island College of Medicine	(1931), (1932), (1934), (1935, 5)	New York
New York Homeopathic Medical College and Flower Hospital	(1916), (1930), (1934), (1935, 4)	New York
New York University, University and Bellevue Hospital Medical College	(1923), (1929), (1934, 3)	New York
University of Rochester School of Medicine	(1934)	New York
Eclectic Medical College, Cincinnati	(1920), (1935)	Ohio
University of Cincinnati College of Medicine	(1932)	Ohio
Western Reserve University School of Medicine	(1932)	Ohio
Hahnemann Medical Col. and Hosp. of Philadelphia	(1933) (1935, 2)	New York, Maryland, (1929), (1935, 3) Pennsylvania
Jefferson Medical College of Philadelphia	(1930) (1927)	New York, Pennsylvania, (1934) N. B. M. Ex.
Temple University School of Medicine	(1934)	New York, Penna.
University of Pennsylvania School of Medicine	(1926), (1929), (1930), (1931)	Penna., (1931) N. B. M. Ex.
University of Pittsburgh School of Medicine	(1911), (1920)	Penna.
Medical College of the State of South Carolina	(1926)	W. Virginia, (1935) S. Carolina.
Meharry Medical College	(1934, 2), (1935)	Tennessee
University of Tennessee College of Medicine	(1931)	Tennessee
Vanderbilt University School of Med.	(1920)	Ky., (1928) Tennessee
University of Vermont College of Medicine	(1934)	Vermont
University of Virginia Dept. of Medicine	(1932), (1935)	Virginia
Marquette University School of Medicine	(1929)	Michigan
University of Wisconsin Medical School	(1929)	Wisconsin
University of Toronto Faculty of Medicine	(1921)	Louisiana

McGill University Faculty of Medicine	(1933)	Minnesota
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	(1934, 2)	New York
Université de Strasbourg Faculté de Médecine	(1918)*	Colorado
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg	(1930)*	New York
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia	(1934)*	Maryland
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia	(1934)	Vermont
University of Edinburgh Faculty of Medicine	(1932)	New York
Syrian Protestant College School of Medicine	(1913)	New York

* Verification of graduation in process.

Book Notices

Starling's Principles of Human Physiology. Edited and revised by C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S., Jodrell Professor of Physiology in University College, London. The Chapters on the Central Nervous System and Sense Organs revised by H. Hartridge, M.A., M.D., Sc.D., Professor of Physiology at St. Bartholomew's Medical College. Seventh edition. Cloth. Price, $8.75. Pp. 1,096, with 554 illustrations. Philadelphia: Lea & Febiger, 1936.

In subject matter this is one of the most complete single volume textbooks on the subject of physiology. However, this very fact constitutes its most serious defect as a textbook for medical students: there is a tendency to become lost in the mass of information. This defect is, however, to a considerable extent neutralized by the clear lucid style and logical treatment consistently followed throughout. Bibliographic references appear as footnotes on the same pages with citations. In addition, each chapter or special section carries at the end a list of references to monographs, special treatises and reviews. The value of some of the illustrations in proportion to the added cost of inclusion is questionable. For example, figure 450 is a full page cut of roentgenograms of the thorax at inspiration and expiration. Numerous consultations with students have revealed that this illustration means nothing to the average student. The same kind of evidence indicates that figures 232, 233 and 234, which are, respectively, a diagram of a recording spirometer, a respiration chamber for small animals and a Douglas bag, give little information not obtainable from figure 230, which is a schematic diagram of a Benedict respiration apparatus; yet the first three occupy most of two pages. However, illustrations of this type are not numerous. In view of the importance which vitamins and endocrines have assumed in physiology, the treatment of these general subjects is inadequate when compared to the space devoted to muscle and circulation, and there is too little correlation with the various phases of the "classic" pattern of physiology. On the other hand, the numerous functions of the liver are discussed in widely separated sections, so that only by exhaustive search with the aid of the index can the reader obtain a comprehensive view of liver physiology. There is thus too little attention given to the interrelations of its different rôles. However, it seems that it is too much to expect of any one author or even any two to be able to present adequately balanced treatment of every phase of the subject of physiology in face of the enormous volume of new information available every year that must be digested, correlated and condensed. The criticisms mentioned are therefore not criticisms of the work of the authors but of a condition. The wonder is that they have accomplished the task so well, for, despite its shortcomings, this textbook is one of the best available in any language.

Undersøgelser over spæde Børns Vestriholdsekret, med særligt Hensyn paa Pepsin-Løbeproblemet. Af Bent Andersen. Paper. Pp. 94, with 4 illustrations. Copenhagen: Levin & Munksgaard, 1935.

The purpose of this work was chiefly to study the secretion of pepsin and rennin from the infant's stomach and to find out whether there was any evidence of the presence of rennin as an independent enzyme, different from pepsin. The study was carried out on infants from 8 to 40 weeks old, mostly convalescents in good condition. The gastric content was obtained by giving a test meal consisting of weak tea sweetened with saccharin. The meal was given in amounts adapted to the age of the infant, after a fast of at least six hours. The gastric content was obtained by aspiration forty minutes after the beginning of the meal. For the determination of peptic activity the amino nitrogen was determined at 0 and 120 minutes by the method of Linderstrom-Lang. There was some evidence of increasing peptic activity as the infants grew older; in infants less than 21 weeks old the aspirated test meal contained an average of 27 "pepsin units" per cubic centimeter, while in the older infants the average was 42 "pepsin units" per cubic centimeter. In undiluted juice from four normal adults the same method gave the values 109, 210, 210 and 220 "pepsin units" per cubic centimeter. Taking into account the dilution by the test meal, the author concludes that the peptic activity of the gastric juice of the infant is of about the same magnitude as that of the adult. The rennin activity was determined by measuring the coagulation time of a suitable medium after the addition of gastric content and then calculating rennin activity by certain methods, which the author explains and justifies. The author was particularly interested in the ratio rennin: pepsin, which was found to be rather constant and of the same magnitude as in adults. This parallelism between the proteolytic and coagulating activity of gastric juice makes the author conclude that in the human being these functions are carried by one and the same enzyme and that there is not, as in the young calf, any independent coagulating enzyme (true rennin, the chymosin of Hammarsten). The work also contains studies of gastric acidity as measured by p_H and by titration. The literature on the various problems involved is extensively discussed.

Johannes de Mirfeld of St. Bartholomew's, Smithfield: His Life and Works. By Sir Percival Horton-Smith Hartley, C.V.O., M.A., M.D., Consulting Physician to St. Bartholomew's Hospital and to the Brompton Hospital, and Harold Richard Aldridge, M.A., Assistant Keeper in the Department of Manuscripts in the British Museum. Cloth. Price, $4.50. Pp. 191, with 4 illustrations. Cambridge: University Press; New York: Macmillan Company, 1936.

The constant interest in the history of medicine which prevails brings us more and more volumes related to the predictions of some of the famous writers of the past. Johannes de Mirfeld was a medieval English medical writer credited by Sir Norman Moore with being the first genuine writer in medicine being in any way connected with St. Bartholomew's Hospital. He represented the priest type of physician. His most notable work as a medical writer was his Breviarium Bartholomei, an encyclopedia of contemporary medical knowledge with much superstitious and magical lore, such as charms and incantations. One of the most interesting chapters is that devoted to the signs of death. Also interesting are the pages dealing with the customs and ethics of medical practice.

Undersøgelser over Refektion, med særligt Hensyn paa Stivelsens Forhold. With an English summary. Af Mogens Nathan. Paper. Pp. 160, with 9 illustrations. Copenhagen: Levin & Munksgaard, 1935.

The term refection refers to a condition that occasionally appears in experimental animals, mainly rats, fed on diets devoid of or poor in vitamin B and characterized by normal growth in spite of the insufficient nourishment and the excretion of bulky white feces containing large amounts of undigested starch. Refection may occur spontaneously or be produced by the feeding of feces from other refected animals. The stool contains characteristic gram-negative vibrios, amylase and starch which is not digested by ptyalin. The amount of starch in the stool is between 60 and 85 per cent in proportion to the amount of dry substance, and the utilization of starch is 57 to 92.4 per cent. Most of the starch escapes digestion in the small intestine. The possibilities are suggested that the reduced digestibility is due to changes in the starch grain itself and that the dyspepsia which results from the low or absent vitamin B content of the diet results in the indigestion of starch and favors the growth of vitamin B producing bacteria.

The Life and Convictions of William Sydney Thayer, Physician. By Edith Gittings Reid. Cloth. Price, $2.50. Pp. 243, with 4 illustrations. New York, London & Toronto: Oxford University Press, 1936.

Dr. William Sydney Thayer, of New England stock, was noted as a physician, a humanist, a teacher and a scholar. He entered Harvard at 16 and, although suspended briefly because of a prank, returned and took his B.A. degree with the class of 1885 as Phi Beta Kappa. He then entered the Harvard Medical School, where he was especially interested in pathology. Postgraduate study in Berlin and in Vienna prepared him for the career finally offered to him as assistant to Osler. It was during his early period at Hopkins that he did his most important work as investigator. Miss Reid has prepared this

book with the assistance of his secretary, his associates, his students and also from his private letters and diaries. The subject of the volume led a most interesting life in medical organizational affairs, in literature and in many other capacities. All those who were associated with him in his career (and they were legion) will find the volume fascinating. Every medical student should find in it a source of inspiration.

Textbook of Surgical Nursing. By Manelva Wylie Keller, B.S., R.N. Third edition. Cloth. Price, $3. Pp. 504, with 177 illustrations. New York: Macmillan Company, 1936.

While most textbooks on surgical nursing are essentially abbreviated works on general surgery, it is not so in this case. This excellent and practical book was written for nurses by a nurse with wide experience in surgical and operating room nursing and teaching and is now in its third edition. The text provides only such information about surgical conditions and operations as nurses ought to have to give the patient intelligent care. In the twenty chapters little is said of etiology and nothing of diagnosis, but a great deal of the things which surgical nurses have to know and have to do. The material is presented in clear, simple style. It is illustrated well and abundantly with excellent photographs and line drawings.

Experimentelle og kliniske Undersøgelser over Rodbehandling af Tænder med højfrekvent Vekselstrøm (Diathermi). Af Ove Brinch. Paper. Pp. 210, with 46 illustrations. Copenhagen: V. Richters Forlag, 1935.

The author has carried out an extensive clinical and experimental study of the influence of diathermy on the periodontal tissues. The technic consists of the insertion of one needle-shaped electrode into the root canal that is to be treated, while the other electrode is held in the patient's hand. The experimental part was carried out in the teeth of dogs and is illustrated by good and instructive photomicrographs of sections through the treated teeth and their supporting tissues. Bacteria were brought into these dogs' teeth and into extracted human teeth and the influence of diathermy on them was noted. Diathermy was applied also to a large number of clinical patients. On the strength of these results the treatment of root canals with diathermy is considered a useful method which offers the advantage that it reaches areas in the root which are inaccessible by other methods. A comprehensive bibliography of the recent German literature on pulp pathology and treatment is included in this thesis.

Undersøgelser over Bacteriers Haptoenaktiverende Evne samt over F-Haptosens Forekomst i forskellige Bakterieorter. Af Sigurd With. Paper. Pp. 115, with 3 illustrations. Copenhagen: Nyt Nordisk Forlag: Arnold Busck, 1935.

This dissertation is concerned mainly with the occurrence of the Forssman heterophilic antigen in certain bacteria. The first chapter deals with the lipoid fraction or hapten of the Forssman antigen and with the power of bacterial suspensions to convert this hapten into a complete antigen. In the second chapter are described the results of efforts to demonstrate Forssman's antigen in certain bacteria by immunization of rabbits and testing the serum for Forssman antibody. The third and last chapter gives the results of a series of observations on the presence of Forssman antibody in the serum of 219 patients suffering from infectious diseases. The book will interest those who are concerned with heterophilic antigens and antibodies.

Preparation of Scientific and Technical Papers. By Sam F. Trelease, Professor of Botany in Columbia University, and Emma Barepta Yule, Head, Department of English in the College of Agriculture of the University of the Philippines. Third edition. Cloth. Price, $1.50. Pp. 125. Baltimore: Williams & Wilkins Company, 1936.

The usefulness of this manual is indicated by the fact that it now appears in the third edition. It is a straight account of the details of good writing and the preparation of scientific manuscripts with actual examples so as to make the matter quite clear to the author. While the book is calculated primarily for the engineer, it has useful information and advice for those in every field of science. It should not be considered, however, as primarily a book for the physician, since the volume published by the American Medical Association and that originally published by Mrs. Mellish for the Mayo Clinic are preferable for medical writers.

Undersøgelser af universelle Kulbrydebades Indvirkning paa experimentel Marsvinetuberkulose. Af Tage Helms. Paper. Pp. 156, with 5 illustrations. Copenhagen: P. Haase & Søns Forlag, 1935.

This doctor's dissertation in Danish presents the details of the author's experiments with light treatment of tuberculosis in guinea-pigs. The main outcome of the work may be summarized as follows: Universal irradiation (arc light) of hairless guinea-pigs increased the resistance to tuberculosis in animals that had been infected with small doses of tubercle bacilli or had been treated previously with the Calmette vaccine. This increase in resistance is ascribed to a special action as shown by the hastening of the specific allergic reactions; light treatment of healthy guinea-pigs that were infected later did not influence the course of the tuberculosis.

Applied Dietetics: The Planning and Teaching of Normal and Therapeutic Diets. By Frances Stern, Chief of Food Clinic, The Boston Dispensary. Cloth. Price, $3.50. Pp. 263, with illustrations. Baltimore: Williams & Wilkins Company, 1936.

The author, who is dean of the food clinic in the Boston Dispensary and who has for almost twenty years been a practical dietitian, presents here the material of her daily work. After consideration of the daily food requirements of the body and the consideration of a normal diet, the author considers therapeutic diets in various diseases and the methods of educating patients in the use of suitable diets. Most of the book consists of a series of excellent tables for developing proper diets for all occasions. The volume is one of the most practical and usable thus far available in this field.

Brookings: A Biography. By Hermann Hagedorn. Cloth. Price, $3.50. Pp. 334, with 16 illustrations. New York: Macmillan Company, 1936.

Robert Brookings, founder of the Brookings Institute, was a merchant who was also an educator and a statesman. This volume records the development of his career. Of special interest to the medical profession is the chapter relating to the founding of the medical school of Washington University, in which is given in intimate detail the development of that institution, including the influence of Pritchett of the Carnegie Foundation and of Brookings. The volume is written in a smooth, interesting style. It is nicely illustrated and a fine story of the success of a typical American.

Probleme der theoretischen und angewandten Genetik und deren Grenzgebiete. Herausgegeben von H. Böhm, et al. Redigiert von W. F. Reinig. Strahlungen: Wesen, Erzeugung und Mechanismus der biologischen Wirkung. Von Dr. Karl G. Zimmer, Assistant an der Strahlenabteilung des Cecilienhauses, Berlin-Charlottenburg. Boards. Price, 2.20 marks. Pp. 72, with 40 illustrations. Leipzig: Georg Thieme, 1937.

This little handbook is one of a group of publications on problems relating to theoretical and applied genetics and related subjects. It contains a technical discussion relating to the various forms of radiation, including infra-red, ultraviolet, ordinary light, roentgen and gamma rays, corpuscular rays and cosmic rays, and the physical and biologic problems associated with them.

A Descriptive Atlas of Radiographs: An Aid to Modern Clinical Methods. By A. P. Bertwistle, M.D., Ch.B., F.R.C.S. Third edition. Cloth. Price, $13.50. Pp. 560, with 808 illustrations. St. Louis: C. V. Mosby Company, 1936.

This volume, a revised and enlarged edition, has been compiled from the material of many men. Its purpose is to show what radiology can do, to encourage medical men to resort to this means as an aid in diagnosis, and to help the inexperienced in reading roentgenograms. Only normal and abnormal subjects commonly seen in general practice are included. Accompanying each roentgenogram is an explanatory diagram or paragraph or both. Short medicolegal and anthropologic sections have been started in this volume. Physicians who have had little or no experience with roentgenograms will find this atlas useful.

CORRECTION

Mathews, A. P.: Principles of Biochemistry.—In the review of this book in THE JOURNAL, January 16, page 230, the reviewer inadvertently confused the volume with the Mathews "Textbook of Physiologic Chemistry." Instead, the volume there reviewed was a short concise textbook, and a new revision of the larger textbook of physiologic chemistry by Mathews will shortly be available.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Accident Insurance: Death from Veronal Poisoning.—The defendant insurance company issued to the insured an insurance policy wherein it promised to pay certain benefits if death occurred as a result "of bodily injuries effected solely through external violent and accidental means." The insured died as the result of an overdose of veronal (barbital). He intended to take veronal but apparently did not intend to take a lethal dose. The trial court, in a suit to recover the benefits specified in the policy, gave judgment for the beneficiary. The supreme court, appellate term, New York, reversed that judgment and the beneficiary appealed to the supreme court, appellate division, New York.

This case, said the supreme court, falls within the category of such cases as *Gallagher* v. *Fidelity & Casualty Co.*, 148 N. Y. S. 1016, affirmed 117 N. E. 1067, and *Lewis* v. *Ocean Accident & Guarantee Corporation*, 120 N. E. 56. In the first case cited, the insured died from sunstroke and though he had intentionally exposed himself to the sun, it was held that his death had occurred through accidental means. In the second case, the deceased died from inflammation of the brain which resulted from infection occurring when the deceased had punctured a pimple with a contaminated instrument. In both cases, the insured had intended the act which resulted in death but an unusual and unexpected result followed. In construing the provisions of an insurance policy, the court said, its words should be judged in the light of the understanding of the average man. Ambiguities and uncertainties should be resolved against the company which drew the policy. So construed, the present policy, the court concluded, provided benefits for a death resulting from veronal poisoning where the insured intended to take veronal but accidentally took an overdose. The judgmcnt of the trial court for the beneficiary was affirmed.—*Mansbacher v. Prudential Ins. Co. (N. Y.), 287 N. Y. S. 486.*

Accident Insurance: Death in Relation to Heart Disease, Trauma and Cerebral Hemorrhage.—The Great Northern Life Insurance Company agreed to pay certain benefits if the insured died as a result of injury effected directly and exclusively of all other causes through external, violent and accidental means. No benefits were payable for the result of the injury if there was no "visible contusion, wound, or other marks or evidence of injury on the exterior of the body at the place of injury," or if the injury was "caused or contributed to directly or indirectly by . . . any pre-existing disease, infirmity, deformity or physical impairment. . . ." The insured died from a cerebral hemorrhage following an automobile accident. The insurance company refused to pay the benefits and the plaintiff, as beneficiary, brought suit. The trial court gave judgment for the plaintiff, and the insurance company appealed to the Supreme Court of Washington.

Several days prior to the accident, the insured, aged 56, underwent a physical examination, admittedly incomplete, which disclosed a low blood pressure, a probable pathologic coronary condition, a peptic ulcer, and a definite mitral valve heart murmur. The physician considered the condition of the insured serious and warned him against any undue strain or excitement. The accident occurred at a street intersection when the automobile driven by the insured collided with another car. Neither car overturned but both were considerably damaged. The driver of the other car upbraided the insured, who remained seated in his automobile, for the accident. The insured appeared in great physical distress, perspiration stood out on his face, and other evidences indicated that he was suffering intense pain. He complained of being sick, and asked that a discussion of the accident be postponed until he felt better. About a half hour later, the insured with difficulty got out of his car, took a few steps, and collapsed. His face became red, then turned purplish, and in a few minutes he died. An autopsy showed that death was due to an extensive cerebral hemorrhage, the blood clot that was removed being described as "large as one's thumb." The insurance company contended that there was no causal connection whatever between the collision and the cerebral hemorrhage. Just prior to the collision, the company contended, the insured sustained a severe heart attack from which he partially recovered and that, when he left his automobile after the collision, he suffered a stroke of apoplexy due partly to the excitement engendered by the antagonistic attitude of the driver of the other car and partly by the exertion of getting out of the car in his then weakened physical condition.

The trial court instructed the jury that while the policy did not cover an injury in which there was no visible contusion, wound or other mark or evidence of injury on the exterior of the body, yet it did not necessarily follow that the injury must be external; that the visible signs and evidence might be such as indicated an internal injury; and that if the deceased became pale, sickly looking, showed signs of injury through perspiration or discoloration of his face at the time of or immediately after the collision, then the jury might find that there were visible marks or evidences of injury within the meaning of the terms of the policy. The words "visible mark or evidence of injury," said the Supreme Court, are not construed in the strict and narrow sense of a bruise, contusion, laceration or fracture, but in the broad sense of something that is discernible, perceptible, or evident on observation. This is the general rule and the rule that was laid down in *Horsfall* v. *Pacific Mutual Life Insurance Co.*, 32 Wash. 132, 72 P. 1028, in which case the court said:

> It is also urged that the injuries causing death left no visible external mark, produced at the time of and by the accident, upon the body of deceased, and therefore the injury was one excepted from the policy. The evidence as stated above shows that immediately after the accident the deceased became deathly pale and sick, his hands and feet became cold, and the perspiration stood out on his face and hands. The next day after the accident his skin, which previously had been ruddy, became a bluish gray color, and remained so until his death. These, we think, were visible external marks, and sufficient to bring the case within the terms of the policy.

The trial court in the present case did not err, in the opinion of the Supreme Court, in instructing the jury as it did.

The insurance company further contended that the evidence as a whole was insufficient to sustain the verdict and judgment. The issues in the present case, said the court, were of such a nature that the jury was necessarily dependent on medical testimony in determining the cause of death. A medical witness for the plaintiff testified that death was caused by a cerebral hemorrhage resulting from the shock of collision, and that neither the coronary trouble nor the peptic ulcer had anything to do with the result. Another physician, a witness for the defense, testified that the cerebral hemorrhage did not occur until after the insured got out of the car thirty minutes after the collision, and that death was then almost instantaneous. In his opinion, the death was the result of a heart attack. The question thus presented was whether death resulted from cerebral hemorrhage induced by shock resulting from the accident or whether it resulted from coronary trouble. The testimony was clear cut and conflicting and presented a question for the jury to decide. It did decide that the death was caused by cerebral hemorrhage resulting from the accident, and the Supreme Court could find no reason for disagreeing with that finding. The judgment of the trial court was therefore affirmed. —*Hill v. Great Northern Life Ins. Co. (Wash), 57 P. (2d) 405.*

Dental Practice Acts: Effect of Surrender of License in Revocation Proceedings.—The Indiana state board of dental examiners instituted proceedings to revoke the license of the appellant to practice dentistry on the basis of charges filed with the board. The dentist appeared before the board and entered a plea of not guilty. After evidence had been heard, however, he voluntarily surrendered to the board his license. Thereafter the board revoked the license and the dentist appealed to the superior court of Lake County. The board filed a motion to dismiss the appeal on the ground that since the dentist had surrendered his license to practice dentistry in Indiana all questions raised in the appeal were moot questions. The superior court dismissed the appeal and the dentist then appealed to the Supreme Court of Indiana.

The dentist undertook to avoid the consequences incident to the surrender of his license by contending that the order of the board revoking his license constituted a refusal by the

board to accept the surrender. With this contention, however, the Supreme Court did not agree. The fact that the license was surrendered, the court said, after the charges were filed and after evidence had been heard, was evidence from which the board could well infer that the dentist was guilty as charged. The court could not see how the order of revocation could in any manner constitute a refusal by the board to accept the surrender of the dentist's license. Furthermore, continued the court, since the record showed that the dentist voluntarily surrendered his license, he was not in a position to question the constitutionality of the dental practice act. The action of the superior court in dismissing the dentist's appeal was affirmed.—*East v. Carr (Ind.), 1 N. E. (2d) 1004.*

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Toronto, Ont., March 25-27. Dr. George W. Corner, 260 Crittenden Blvd., Rochester, N. Y., Secretary.
American Association of Pathologists and Bacteriologists, Chicago, March 25-26. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.
American Orthopsychiatric Association, New York, Feb. 18-20. Dr. George S. Stevenson, 50 West 50th St., New York, Secretary.
Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 15-16. Dr. William D. Cutter, 535 North Dearborn St., Chicago, Secretary.
Arizona State Medical Association, Yuma, April 1-3. Dr. D. F. Harbridge, 15 East Monroe St., Phoenix, Secretary.
Florida Medical Association, St. Petersburg, April 5-7. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
Pacific Coast Surgical Association, Seattle, Wash., and Victoria, B. C., Feb. 24-27. Dr. H. Glenn Bell, University of California Hospital, San Francisco, Secretary.
Southeastern Surgical Congress, Louisville, Ky., March 8-10. Dr. Benjamin T. Beasley, 478 Peachtree St. N.E., Atlanta, Ga., Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Ninth Annual Meeting, Held in Chicago, Nov. 6 and 7, 1936

The President, Dr. Fred M. Smith, Iowa City, in the Chair

(Continued from page 504)

The Alimentary Elimination of Normally Ingested Lead

Dr. Robert A. Kehoe, Cincinnati: A study of normal human subjects has shown that the gross alimentary output of lead over a period of months is substantially equivalent to the gross lead intake in food and drink. The data of daily observations have been studied to determine the proportion of ingested lead which passes through the alimentary tract unabsorbed, and the proportion which is absorbed and subsequently excreted. The alimentary lead output and intake are strongly correlated over four day periods. Thus it is apparent that there is no prolonged delay in the elimination of the lead, and it might be supposed that the greater portion of the ingested lead simply traverses the alimentary tract. A relationship between the degree of absorption and the alimentary emptying time is suggested by the results on several subjects.

Response of Normal and Diabetes Insipidus Subjects to the Ingestion of Water

Drs. Thomas Findley Jr. and H. L. White, St. Louis: Verney has assumed that the polyurias of diabetes insipidus, of the perfused isolated kidney and of water diuresis are all due to diminished concentration of "pitressin" in the blood. Peroral administration of water to the intact normal mammal produces diuresis only after a definite interval of about one hour, during which time the blood pitressin content is falling below its threshold level in response to the stimulus of blood electrolyte dilution accompanying the absorption of water. If this theory is true, the diabetes insipidus subject should exhibit diuresis much sooner after drinking water because he has little or no pitressin in his blood to begin with. Eight experiments on three normal subjects show that the maximum dilution of blood electrolytes, as determined by the serum specific conductivity, precedes the peak of diuresis by about thirty-seven minutes. Similar studies on two diabetes insipidus subjects show a similar blood dilution after the ingestion of water but, contrary to expectations, no diuresis curve was obtained. In view of the fact that no time interval could be established between the peaks of hydremia and of diuresis, no evidence either for or against Verney's theory was obtained; but the capacity of the diabetes insipidus subject to retain extra water for as long as eight hours is a little appreciated phenomenon and has important bearings on the mechanism of urine formation.

Excretion of Hormone-like Substances in the Urine

T. F. Gallagher, Ph.D., A. T. Kenyon, M.D., D. H. Peterson, R. I. Dorfman, Ph.D., and F. C. Koch, Ph.D., Chicago: Benzene extracts of acidified urine were assayed on capons and castrated rats for their comb-growth stimulating and estrogenic properties. The normal male excretes from 13 to 79 international capon units of androgen and the equivalent of from 3 to 29 micrograms of theelin (estrone) daily, without evidence of cyclic change in continuous studies over six weeks periods. The normale female excretes from 13 to 50 international capon units of androgen and the equivalents of from 3 to 60 micrograms of theelin daily, the latter showing two intermenstrual peaks. One woman with adrenal virilism excreted 480 capon units of androgen daily, while fourteen other virile women showed from low to slightly high values.

Therapeutic Value of Convalescent Serum in Scarlet Fever

Drs. Max Fox and Maurice Hardgrove, Milwaukee: A comparative study was made of 1,028 patients with scarlet fever; 139 who received scarlet fever antitoxin, 589 who received convalescent serum, and 300 who were untreated. All except 294 who were treated with convalescent serum in the home were in an isolation hospital. The majority of the cases of the home group were of moderate severity, while those of the hospital group were severe and often complicated. The sex and average age incidences were approximately the same. The average length of time after treatment until normal temperature was reached in the convalescent serum group was about one-half that of the antitoxin group. The average twelve hour fall of temperature in the serum group was 3.5 degree (hospital) and 3.4 degree (home) as opposed to 2.1 degree in the antitoxin group. In 68.4 per cent of the home group satisfactory response was shown if the serum was given within a three-day period, and in 14.9 per cent when given later than three days after the onset of the illness (83⅓ per cent). In the hospital group a satisfactory response was obtained after convalescent serum in 90 per cent, and in 60 per cent when antitoxin was used. Complications occurred in 35 per cent of the cases after the use of antitoxin and in 16 per cent (hospital) and 12 per cent (home) of the convalescent serum groups. The incidence of reactions after convalescent serum was 1 per cent, as opposed to 35 per cent after antitoxin. Deaths occurred less frequently in the home group.

DISCUSSION

Dr. Max Fox, Milwaukee: There were eight deaths reported at the Isolation Hospital from among 295 patients, all of whom received convalescent serum. These patients were all admitted to the hospital from five to thirteen days after the diagnosis had been made and presented complications. They received from 20 to 120 cc. of convalescent serum. Convalescent serum, to be effective, must be given early and in large doses. If complications have already occurred, the convalescent serum may be of no help. In addition to convalescent serum, these patients were treated with intravenous therapy and specific and nonspecific immunotransfusions. There were available a number of post-scarlet fever patients properly typed whose blood could be used in an emergency; with the advent of convalescent serum we ceased to use these donors except for cases of this serious type. About 20 per cent of the cases treated at the Isolation Hospital fell into this group presenting complications or marked toxemia. Approximately 80 per cent were mild cases and received only general care. It is obvious that the clinician must be able to evaluate the cases with which he is confronted and must know which are the cases in which complications are likely to develop. For the general practitioner I recommend that convalescent serum be used in most cases.

I take this opportunity of presenting a series of cases seen in consultation in the city of Milwaukee during an epidemic of scarlet fever. In this series there were eleven instances in

which other forms of streptococcic infection occurred among the contacts of scarlet fever patients. In one family the mother died of septicemia, probably puerperal, the grandmother had erysipelas and the grandchild scarlet fever. In another instance two children and the mother were brought into the Isolation Hospital with scarlet fever and the nurse who took care of them developed erysipelas. In another family the mother died of scarlet fever and the child developed the septic type of erysipelas. In another case at the County Hospital a nurse, who was in attendance on a child with scarlet fever, developed erysipelas. In the same hospital a nurse developed scarlet fever while in attendance on a case of erysipelas. In another instance a mother developed sore throat, the daughter developed scarlet fever and was attended by a nurse who developed erysipelas. There seems to be clinical evidence to show that there is a relationship between scarlet fever and erysipelas. I am certain from clinical observations that such cases as I have discussed do occur.

DR. W. O. THOMPSON, Chicago: From the mortality rates presented it would appear that a patient who develops scarlet fever is less likely to die if treated at home than if treated in the hospital. What is the reason for this? Do the patients who remain at home have the disease in a milder form than those who are confined to the hospital?

DR. ISADORE PILOT, Chicago: I want to say a word about the statements of the authors that scarlet fever and erysipelas may be due to the same hemolytic streptococcus. My work on septic sore throat, particularly in epidemic sore throat, and epidemic scarlet fever tends to show that scarlet fever and erysipelas are not related. For example, in the analysis of scarlet fever epidemics practically no cases of erysipelas have been reported, whereas in connection with septic sore throat the severe epidemics have shown the complication of erysipelas during convalescence. In my experience with scarlet fever patients and in the experience of contagious disease hospitals, erysipelas is a very unusual complication of scarlet fever, whereas in septic sore throat and tonsillitis with sinusitis, otitis media or enlarged glands, erysipelas is not an uncommon complication. I would therefore disagree with the authors that the etiologic organisms are identical in scarlet fever and erysipelas. The clinical results that may be obtained from convalescent serum and streptococcus serums may be misleading because there may be certain antibodies common to both scarlet and erysipelas streptococci.

DR. GEORGE F. DICK, Chicago: My experience would agree with that of Dr. Pilot. I find that there is a distinction between these two diseases. If one takes a series of 500 people and immunizes them to erysipelas toxin they will still give a positive test to scarlet fever toxin. If another 500 are immunized with scarlet fever toxin, they will still give a positive skin test with erysipelas toxin. With erysipelas antitoxin and scarlet fever toxin there is no cross neutralization. With scarlet fever antitoxin and erysipelas toxin there is no cross neutralization. Cellulitis and dermatitis are seen when patients with scarlet fever are operated on, as for mastoiditis, but this is not called erysipelas. It is true in my experience, as in Dr. Pilot's, that erysipelas is commonly found in epidemics of sore throat, though not common in epidemics of scarlet fever. One is also unable to distinguish immunologically between the organism of septic sore throat and erysipelas. I think the important thing about the treatment of scarlet fever is that, as the authors mentioned, of using either convalescent serum or convalescent antitoxin to treat the case early. Unfortunately, doctors wait until the later stages to use either one at which time neither will produce a result.

DR. MAURICE HARDGROVE, Milwaukee: With reference to the low mortality in the home group, most of those cases were of mild or moderate severity and convalescent serum was administered early. The majority of the cases in the hospital group in which convalescent serum was given were severe or complicated and the serum was given later in the disease. It appears to be necessary to give convalescent serum early in the disease in order to lower the number of deaths and the incidence of complications.

DR. MAX FOX, Milwaukee: Possibly I did not make myself clear in one statement. I did not say that scarlet fever was complicating erysipelas or that we saw the two at any time in the same individual. In reviewing the literature I found that it occurred once in 800 times. I did say that we found the two entities occurring in the same home under suspicious circumstances. These were clinical observations and as clinical observations the patients received convalescent pooled serum. Although we regard scarlet fever and erysipelas distinct clinically and etiologically, though caused by a hemolytic streptococcus, one cannot explain the cited cases otherwise than that they have occurred as the result of the same causative agent. It seems reasonable to anticipate that continued investigations on the problems of streptococcus differentiation will yield results supporting my clinical experience.

Clinical Experiments with Benzedrine Sulfate

DRS. EDGAR V. ALLEN, DWIGHT L. WILBUR and ALEXANDER R. MCLEAN, Rochester, Minn.: Benzedrine sulfate is a sympathomimetic compound structurally related to ephedrine and epinephrine. Pharmacologic studies have indicated that this drug has a profound stimulating effect on the higher centers of the central nervous system. The effects of the drug administered orally in doses of from 10 to 20 mg. before breakfast, and frequently repeated at noon, have been studied in ninety-five patients without demonstrable significant organic disease whose chief complaints were melancholia, chronic fatigue and exhaustion, or nervousness. In from 75 to 80 per cent of patients with chronic exhaustion or depression the immediate results have been favorable and in some instances spectacular, leading to complete relief of exhaustion, exhilaration and increased capacity for mental and physical effort. In psychoneurotic patients, particularly those who are anxious, highly nervous and apparently stimulated, benzedrine had a less favorable effect. Of fifteen patients who had used the drug daily over a period of from two to three months, twelve have remained improved. In view of the possible unfavorable effects which have been reported by others, we feel that until further observation is made it is probably unwise to recommend the continuous use of benzedrine except for patients who are less than 60 years of age, who present no evidence of cardiovascular disease and who can be closely followed.

DISCUSSION

DR. ROBERT W. KEETON, Chicago: I wonder whether the authors made any observations on the gastro-intestinal tract with this drug.

DR. L. N. KATZ, Chicago: About a year and a half ago I had the good fortune of hearing about this drug from Dr. Nathanson, formerly of Minneapolis, who informed me that there was marked depression as an after-effect following the use of the drug. Were such after effects observed in this study?

DR. M. J. SHAPIRO, Minneapolis: I have been using benzedrine sulfate for somewhat more than a year. My first experience with the preparation was in the treatment of narcolepsy, in which benzedrine works admirably. My two narcoleptic patients are still well controlled with the same dose of the drug. With regard to the treatment of so-called chronic exhaustion, I have had a number of such patients on benzedrine for the past year. When I first began its use I prescribed doses that were too large, causing many of the patients to complain of nervousness, insomnia, rather marked loss of appetite, tachycardia, and often irregularity of the heart. On considerably smaller doses, I find that a favorable response is obtained without the disagreeable side-effects. The use of large doses over a period of time may cause a considerable rise in blood pressure. Most patients with chronic exhaustion can be controlled favorably with 5 mg. twice a day, preferably after breakfast and after lunch; giving benzedrine later in the day may cause insomnia. In some instances, good results were obtained with 2.5 mg. twice a day. As the authors have stated, one must use judgment in selecting the type of patient to be treated with benzedrine. The asthenic individual with a tendency to hypotension reacts most favorably. The hyperkinetic patient who exhausts himself with too much work should not be given this new drug; it may produce uncomfortable overstimulation. I have seen no ill effects from benzedrine after using it a year, particularly when small doses were given.

DR. H. M. KORNS, Iowa City: Dr. W. L. Randall and I recently experimented with benzedrine in a case of orthostatic

hypotension. The man was 63 years old, with characteristic manifestations of that syndrome. He has been taking the drug for six months without any unfavorable effects so far as we can observe except a tendency to insomnia, which can be controlled with barbiturates. The dose has been high, as much as 150 mg. a day, especially in hot weather. The patient preferred benzedrine to ephedrine because it made him less tremulous, induced less insomnia and was perhaps somewhat more effective in dispelling his weakness. The hypotension was more easily and effectively controlled with benzedrine than with ephedrine.

DR. LOUIS LEITER, Chicago: I should like to know whether the authors have had any experience with this drug in muscular dystrophies.

DR. DWIGHT L. WILBUR, Rochester, Minn.: In answer to Dr. Keeton's question, the only observations on gastro-intestinal function we have made have been subjective ones. One of the most remarkable subjective changes is loss of consciousness of abdominal organs. Meyerson has demonstrated that benzedrine relieves spasm of the gastro-intestinal tract, and he has used the drug as a method of relieving spasm during roentgenologic study of patients. Dr. Katz had mentioned the fact that Dr. Nathanson of St. Paul has done considerable work on the effects of benzedrine in exhausted patients. This work served as an inspiration for our observations. I believe that Dr. Nathanson is in a better position than we are to discuss the effects of benzedrine used daily over a considerable period. Dr. Shapiro emphasized the fact that increase in pulse rate may follow administration of benzedrine. We have made similar observations in many cases, especially in patients who are nervous and already stimulated. Dr. Korns spoke about the effect of the drug in orthostatic hypotension. In one case we have observed that a more satisfactory result was obtained than with ephedrine. In answer to Dr. Leiter's question, we have not observed the effect of benzedrine in muscular dystrophy. I should like to emphasize the fact that benzedrine is a stimulant, that its effect is temporary, and that it therefore probably does not fundamentally and permanently alter a psychiatric disorder or a state of chronic exhaustion or neurosis.

General Edema of Indeterminate Etiology

DRS. MELVIN W. BINGER and NORMAN M. KEITH, Rochester, Minn.: Three selected cases with edema of obscure etiology were studied. It is interesting that in these cases there was a low serum protein concentration, all below 5 Gm. per hundred cubic centimeters and one as low as 2.7 Gm., yet there was no albumin in the urine. No gross evidence of liver disease was found. Basal metabolic rates, liver functional tests, blood chemistry and renal functional studies were carried out. One case came to necropsy with the outstanding finding of pancreatic degeneration. These cases were treated with high protein, low salt and low fluid diet, and potassium nitrate, from 8 to 12 Gm. daily, was given. In all cases the edema was controlled.

DISCUSSION

DR. JOHN TUCKER, Cleveland: I should like to ask the authors whether they have given their patients a thorough trial with massive doses of yeast extract. I have found that a certain group of patients with edema, in whom the usual causes of fluid retention have been ruled out, improve markedly with adequate amounts of vitamin B complex. It would appear that such patients are suffering with an atypical form of wet beriberi.

DR. MELVIN W. BINGER, Rochester, Minn.: Two of these patients were on a high vitamin diet. The other patients had been on a general diet with plenty of fruits and vegetables. There was no evidence of lack of vitamin.

Study of the Erythrocyte Volume and the Proteins of the Blood Serum

DR. FRANK H. BETHELL, Ann Arbor, Mich.: The mean corpuscular volume varies normally between 86 and 96 cubic microns, according to our observations with the Wintrobe technic. Deviations from this range are usually considered to denote developmental abnormality, the shift to large or small red blood cells occurring in the bone marrow. Such is the case of the macrocytosis of pernicous anemia and the microcytosis of iron deficiency anemias. However, alterations of erythrocyte size may also depend on changes in the environment of the circulating red blood cells. An appreciable decrease in the serum protein is accompanied by red blood cells of increased volume. A swelling of the cells apparently occurs, which is related specifically to the albumin content of the serum and is not a simple osmotic phenomenon. Instances of macrocytosis accompanying cirrhosis of the liver are often of the latter type and are related to decrease of the serum albumin with reduction of the albumin-globulin ratio. Consequently, with certain limitations, determination of the average erythrocyte volume may give a clue to the functional efficiency of the liver in protein metabolism.

Further Studies on the Glomerular Function Test with Sodium Ferrocyanide

DR. EDWARD J. STIEGLITZ, Chicago: In 1934 Stieglitz and Knight published a preliminary report on sodium ferrocyanide excretion as a clinical test for glomerular function. This first clinical application of a ferrocyanide salt as a test substance was based on extensive experimental evidence that it is secreted solely by the glomeruli. Since then additional work has confirmed the first impression of the usefulness and physiologic soundness of this test procedure. A much larger series of normal control cases precisely defined the normal range of excretion. The new mean normal corresponds very closely with the 1934 figures. Additional studies in hypertensive arterial disease show that glomerular function is depressed more than tubular secretion. In hypertensive arterial disease there is an almost constant minute output of sodium ferrocyanide after the first hour; if the amount remaining in the body is used as the basis for the percentage excreted per hour the curve obtained is practically a horizontal line. This is taken as evidence that in hypertensive arterial disease the glomeruli are constantly active to the maximum of their depleted capacity. A close parallelism is found between the half hour output of sodium ferrocyanide and the maximum urinary specific gravity in the concentration test of Fishberg. I feel that the ferrocyanide test is quite sensitive to glomerular function change. Of necessity the full and thorough clinical evaluation of the test is still incomplete, but the present additional data contribute appreciably to our knowledge. Further studies are necessary and are thus being continued.

DISCUSSION

DR. WALTER S. PRIEST, Chicago: For the past year I have been interested in this work of Dr. Stieglitz, applying it to patients of the hypertensive group. In one patient, a woman of 60 with apparently early hypertension but not fixed hypertension because it responded to the ordinary methods of therapy, rest, and so on, it interested me to note that in the absence of demonstrable renal damage the ferrocyanide excretion was very slightly diminished. It raised the question in my mind whether this test might furnish a means of forecasting hypertensive states before they actually develop clinically, as indicated by rise in blood pressure or other symptoms. Perhaps the type of curve of the ferrocyanide excretion if corrected for the percentage remaining in the blood, as Dr. Stieglitz has shown, will give a clue as to the possible development of hypertension in individuals approaching the age at which we begin to look for cardiovascular disease. This test might be used as a routine in connection with periodic examination. I think that the test deserves further study before it can be properly evaluated.

DR. HAROLD C. HABEIN, Rochester, Minn.: I am glad to see that Dr. Stieglitz as well as others is continuing the study of sodium ferrocyanide as a test of renal function. The test is based on sound physiologic principles, and as time goes on further study and experience will make it possible to evaluate the test. Baker and I carried out studies with sodium ferrocyanide as a test of renal function in cases of urinary obstruction, for the first time so far as I know. Our studies were not carried out on a large group of patients, as the test has to be discontinued because of pain in the urethra in cases in which an inlying urethral catheter has been placed. Our study did, however, include ten patients and the results of our study would indicate that the sodium ferrocyanide test correlates very closely with other tests of renal function. From our study we

also concluded that the sodium ferrocyanide test did not, from a practical standpoint, give us information which we could not get from other tests of renal function, especially the split phenolsulfonphthalein test.

DR. EDWARD J. STIEGLITZ, Chicago: An interesting case, which we did not report because of lack of time, has been observed for more than two years. The kidney function has been studied at intervals of about three months and gradual improvement in ferrocyanide output noted. We have seen no evidence whatever of intoxication from sodium ferrocyanide in the dosage used and advocated. It takes many years to evaluate any diagnostic test. It certainly took a long time before we felt any confidence in the phenolsulfonphthalein test. Recent work, many years after the introduction of the test, shows that there is much variation in the excretion of phenolsulfonphthalein from extrarenal factors. With sodium ferrocyanide the output appears to be wholly independent of the volume of urine secreted. This is in sharp contrast to the usual experience with phenolsulfonphthalein. The present report is but one step further and the work with this glomerular function test is still far from being complete. Extended studies are justified and necessary. They are being continued.

The Specific Dynamic Action of a Mixed Meal

DR. CYRIL M. MACBRYDE, St. Louis: Studies were begun four years ago on the relationship to the body weight of the rise in metabolism following a mixed meal. More than forty-five individuals have been followed through periods of weight gain and weight loss, both spontaneous and induced by diet, desiccated thyroid, dinitrophenol or insulin. Fifteen normal individuals were used for controls. In addition, more than thirty single determinations have been made on abnormally obese or thin persons. The specific dynamic action was found not to vary with the nutritional state but with the nutritional phase. Patients gaining weight showed lower specific dynamic action than the same patients when losing. With rapid weight loss the specific dynamic action tends to be very high. Pituitary and thyroid disease have no definite influence except as they change the nutritional phase.

Motor Involvement of Central Nervous System in Pellagrins

DRS. M. A. BLANKENHORN and TOM D. SPIES, Cincinnati: Pellagra is a clinical syndrome which characteristically affects the skin, gastro-intestinal tract and nervous system. In a given case of pellagra one or more of these systems may be involved. A diagnosis of pellagra can be made only if the person has characteristic pellagrous dermatitis or glossitis, or both. The lesions of the central nervous system are not visible during life, and the postmortem observations usually do not correlate well with the symptomatology of the disease. Motor involvement of the central nervous system in certain pellagrins has been described, but no controlled studies have been reported which show that the involvement of the motor portion of the central nervous system, like the accepted manifestations of the disease (dermatitis and glossitis), may also respond to antipellagric therapy. Three patients whom we observed had motor involvement of the central nervous system at a time when they had diagnostic pellagrous lesions. Two were adults who were addicted to alcohol; both had severe motor disturbances, characterized by rigidity, inability to walk, and slow choreiform movements; one resembling hemiplegia, the other spastic paraplegia. The third, a boy of 13 who did not drink alcohol, had paralysis of the four extremities which was suggestive of poliomyelitis. Following the administration of a high caloric, high protein diet and large amounts of powdered brewers' yeast, the pellagrous dermatitis disappeared and the motor function of the central nervous system was restored in all three cases.

DISCUSSION

DR. M. G. PETERMAN, Milwaukee: It seems to me that one of the cardinal symptoms of pellagra which has developed to any great extent is the loss of the deep tendon reflexes. Three years ago I saw a child, aged 7 years, who had elsewhere been put on a ketogenic diet and within six months developed a typical case of pellagra, with some anesthesia of the fingers, loss of the deep reflexes, some hesitation in gait and weakness in the legs. The child made an excellent recovery on 300 mg. of dry brewers' yeast every day, but it took between eighteen months and two years to recover completely the loss of the patellar reflexes.

DR. TOM D. SPIES, Cincinnati: The case described by Dr. Peterman certainly seems to be one of pellagra associated with peripheral neuritis. I think that the peripheral neuritis in such cases responds to the administration of large amounts of a potent brewers' yeast. The three patients with involvement of the central nervous system were more severely diseased than the average pellagrin with peripheral nerve involvement.

Relation of Thyroid Gland to Hematopoiesis

DRS. J. DEWEY BISGARD and JOHN C. SHARPE, Omaha: This report presents complete blood studies in thirty-two totally thyroidectomized rabbits showing the development of the macrocytic anemia of myxedema and its response to thyroid feeding, liver extract and iron. This is controlled with the feeding of the same substances in thirty-five normal rabbits. Studies include daily reticulocyte counts and frequent hematocrit determinations.

DISCUSSION

DR. O. O. MEYER, Madison, Wis.: These results, I think confirm to some degree what we have appreciated about cretinism and myxedema. One point of interest was that the reticulocytes persisted at a high level, in one slide from 6 to 8 per cent. That differs from what we have found in thyroidectomy in rats. The reticulocytes normally were about 3 per cent, and a very significant decrease followed total thyroidectomy. One would expect an increase in reticulocytes following thyroid administration.

DR. J. DEWEY BISGARD, Omaha: We have shown the anemia and other signs of myxedema that developed in these total thyroidectomized rabbits. We have another group of thyroidectomized rabbits that were used for entirely different experimental purposes but do have some bearing on this problem. After these animals were totally thyroidectomized we transplanted the tissue removed at operation into the anterior chambers of both eyes, in some animals as an autogenous and in some as a heterogenous transplant. The transplanted tissue becomes attached to the iris and becomes vascularized because it gets its blood supply from the iris very promptly. Two things happened in these animals, and they can be divided into two or more groups according to the fate of the transplants. In one group the transplants remained vital and were vital up to the time the animals were killed, as long as ten months after transplantation. None of these animals developed either signs of myxedema or the anemia of myxedema, and so it appears that these transplants were actually functioning. In the other group the transplants at the time the animals were killed were found to have undergone complete necrosis. We found the thyroid tissue all gone and replaced by fibrous tissue. All in this group developed anemia and other signs of myxedema, but they developed these signs from twelve to sixteen weeks following total thyroidectomy, one or two months later than the group reported, the group that received no transplants. The delay in development of myxedema was due presumably to two causes: first, that the transplants had a short period of viability, and second, that the thyroid tissue which was transplanted carried with it a certain amount of thyroid principle that delayed the onset of myxedema.

Increase in Heights of Thyroid Cells as a Method of Thyrotropic Hormone Determination

DRS. PAUL STARR and RULON W. RAWSON, Chicago: Our object is to describe the application of micro measurements of the hyperplasia of the thyroid, induced by the thyrotropic hormone, with statistical analysis of these measurements, as a quantitative determination of the hormone present. Female guinea-pigs weighing 200 Gm. after three daily subcutaneous injections of quantities ranging from 0.0025 to 0.02 cc. of antuitrin T were examined post mortem and the thyroids removed on the fourth day. Paraffin sections stained with hematoxylin and eosin were studied under oil immersion. The height of the representative cell of each of 200 acini, selected according to a uniform system, was determined with an ocular micrometer. The 200 measurements were graphed in a frequency

curve, and the statistical mode, mean, standard deviation, and variability determined. Since each increase in dosage of thyrotropic hormone administered causes a characteristic shift in the frequency curve, this procedure affords a quantitative method of determining the effects of the thyrotropic hormone on the guinea-pig thyroid gland.

DISCUSSION

DR. CLARENCE F. G. BROWN, Chicago: I think those of us who clinically use these hormone compounds wonder whether these pharmaceutic preparations are real hormone preparations. This piece of work demonstrates in a clear, quantitative way that there is a genuine physiologic hormone at least in this preparation. Such work removes "folklore" and conjecture from hormone investigations and may lead to less pharmaceutic perversion.

DR. PAUL STARR, Chicago: We have been working with the thyrotropic hormone for several years. The present method of measuring thyrotropic dosage indicates that the amounts of this hormone used in experiments in previous years were greatly in excess of physiologic levels.

The Normal Urinary Iodine of Man

DRS. GEORGE M. CURTIS and ITALO D. PUPPEL, Columbus, Ohio: Iodine is a normal constituent of human urine. Two hundred and twenty-seven determinations made on thirteen individuals without evidence of thyroid disease gave from 7 to 196 micrograms excreted for the twenty-four hour period, with averages of from 36 to 78 micrograms. The grand average was 51 micrograms for twenty-four hours.

The daily fluctuation in the excretion of iodine by the kidney may be great. This may be due to several normal variables. Even though the urinary excretion of iodine is influenced normally by many factors, wide variations are not representative of ordinary conditions. When the subject is kept on a constant regimen immediately preceding and during the period of study, the daily output is remarkably constant. The normal daily variation in the urinary iodine is accounted for chiefly by differences in the food iodine. The urinary iodine, normally, is derived to a lesser extent from the body metabolism.

The relation of age to iodine metabolism is as yet unknown. However, we observe that two boys of 8 years excreted 41 micrograms (average) of urinary iodine daily over a period of fifteen days; five men from 28 to 34 years of age excreted 50 micrograms (average) of urinary iodine daily over a period of sixty-nine days, and two men of 54 and 59 excreted 73 micrograms (average) of urinary iodine daily over a period of thirty days.

The average normal iodine excretion in central Ohio is less than that of normal man in the five goiter-free regions of Danzig; Berlin, Germany; Vik-i-Sogn, Norway; New Orleans, La., and Forte dei Marmi, Italy. It is a little less than that of the mildly goitrous region of Effigen, Switzerland. However, it is greater than that of the goitrous regions of Sandsvaer, Norway; Lwów, Poland, and Pécs, Hungary.

The normal human urinary excretion of iodine in five nongoitrous regions is approximately four times that in five goitrous regions. This difference in the urinary excretion of iodine is probably due to a difference in the available absorbable iodine in these different regions.

DISCUSSION

DR. ITALO D. PUPPEL, Columbus, Ohio: These were all normal individuals living in various regions. We did not take into consideration any of the goiter patients.

Plasma Hemorrhage

DR. HENRY N. HARKINS, Chicago: The importance of loss of whole blood in certain types of secondary shock is well recognized, but the etiologic rôle of loss of blood plasma-like fluid has not received the attention it deserves. The present paper discusses several well known examples of loss of plasma as well as several not considered heretofore. The presence and importance of plasma loss in the following conditions is considered: burns, intestinal manipulation, portal obstruction, release of an extremital constrictor, bile peritonitis, tissue autolysis in vivo, freezing, pneumonia, and externally strangulated colostomy loops.

DISCUSSION

DR. C. J. LUNDY, Chicago: I should like to ask Dr. Harkins whether in his observations of these patients he used any method to prevent or overcome this plasma loss, such as injection of acacia solution or any hypertonic solution and if so, did it have any influence on the course of the patient's illness?

DR. HENRY N. HARKINS, Chicago: In these charts the distinction between experimental animals and patients is not always made clear. In a large number experimental animals were discussed. In the patient who was burned, blood transfusion was given and blood concentration seemed to go on independent of blood transfusion. I have given no blood plasma infusions to patients but have to experimental animals. The condition of the animals improved temporarily, but almost invariably they went on to eventual death, just as would have been expected if no plasma infusions had been given.

Effect of Iron Deficiency in Pregnant Rats on the Young

DR. HOWARD L. ALT, Chicago: This problem was undertaken in order to throw further light on the relationship of maternal iron deficiency to iron deficiency in the infant. Albino rats receiving a whole milk powder diet did not develop anemia during a single pregnancy but had marked depletion of liver iron when studied twenty-one days post partum. During and after a second pregnancy, a moderate hypochromic anemia occurred. New-born rats from mildly deficient mothers had normal blood hemoglobin at birth but had marked depletion of the iron reserves. More severe iron deficiency in the mother resulted in a marked decrease in blood hemoglobin in the newborn. Administration of iron to the mother rats protected both the mothers and the young against iron deficiency. Supplements of copper to the mother's diet did not alter the results given. In iron deficient suckling rats the total hemoglobin formation during the first eighteen days of life was practically normal. From these experiments it seems likely that iron deficiency in pregnant women may result in a diminished iron content of the new-born. The observations of Strauss and of Josephs suggest that a normal iron reserve at birth is important for normal hemoglobin formation during the first year of life.

DISCUSSION

DR. FRANK H. BETHELL, Ann Arbor, Mich.: I should like to ask whether these rats did well on the Klim diet. In my experience feeding rats such diets has not maintained their weight during pregnancy. With a mixed diet adjusted to a daily iron content of less than 0.3 mg. the mother rats' hemoglobin was decreased from 15 to about 10 Gm. per hundred cubic centimeters and the young developed such severe anemia during the first fourteen days of life that their hemoglobin was less than 3 Gm. per hundred cubic centimeters.

DR. ADOLPH SACHS, Omaha: In whole blood iron determinations of cord blood at birth the infant presents so-called polycythemia of the new-born. The whole blood iron takes a precipitous drop at once. Then there is another drop at the third month, which is hard to explain but which may be due to an iron depletion. Whole blood iron deficiencies occur in the late weeks of pregnancy of some mothers which can be avoided by administration of iron, which in turn aids the new-born. Dr. Alt found that addition of copper to the mother's diet in rats did not alter the results. This is also true in human beings because in a great many copper determinations in pregnant women I never found a copper deficiency.

DR. O. O. MEYER, Madison, Wis.: I wonder whether Dr. Alt administered so-called iron with copper, which is quite common, or whether it was copper-free iron.

DR. HOWARD L. ALT, Chicago: In answer to Dr. Bethell, I can say that adult rats which received an exclusive Klim diet for nine months remained in an excellent nutritional state. Also milk-fed animals were apparently able to undergo a normal pregnancy without difficulty. Undoubtedly, much depends on the nutritional condition of the rats used. The rats in our colony receive liver and vegetables once a week in addition to the stock diet. In answer to Dr. Meyer, no attempt was made to remove copper impurities from iron used for supplementary feedings. The preparation of ferric chloride used has been shown to contain insignificant amounts of copper.

(To be continued)

Current Medical Literature

AMERICAN

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American Journal of Diseases of Children, Chicago

52: 1293-1526 (Dec.) 1936

Encephalography in Infants and in Children. J. L. Law, Ann Arbor, Mich.—p. 1293.
*Tremors of the New-Born (Birth Shock), Tetany and Nervous Disturbances in Children: Clinical Observations and Treatment. H. R. Litchfield, Brooklyn.—p. 1312.
Lipid Composition of Blood in New-Born Infants. E. M. Boyd, Kingston, Ont.—p. 1319.
*Serum Disease and Therapeutic Effect of Diphtheria Antitoxin. I. Davidsohn and L. W. Hunt, Chicago.—p. 1325.
Insensible Perspiration in Children: II. Statistical Correlation of Insensible Perspiration and Various Body Measurements; Proposed Basal Standards for Children. G. J. Ginandes and Anne Topper, New York.—p. 1333.
*Bile Peritonitis in Infancy. E. Caulfield, Hartford, Conn.—p. 1348.
Histologic Aspect of Experimental Poliomyelitis Produced via Gastro-Intestinal Tract. J. A. Toomey, Cleveland.—p. 1361.
Lacunar Skull of the New-Born. H. B. Rothhart, Detroit.—p. 1375.
Treatment of Pertussis with New York State Pertussis Vaccine. T. S. Bumbalo, Buffalo.—p. 1390.
Nutrition of Children on Vegetable Diet: III. Growth and Allergy. Dorothy Engelhard Lane, Chicago.—p. 1397.

Tremors of the New-Born.—From a study of the laboratory data of infants with tremors or birth shock and children with tetany, Litchfield discovered that many of the minor disturbances might be dependent on an underlying calcium deficiency. In addition to the supplying of the full demand of the body for calcium, certain further therapy seemed necessary for the control of the common functional disturbances as represented in these cases. In considering the medication most appropriate for these patients, he found that a new chemical compound of calcium lactobionate and calcium bromide appeared to possess such properties as to make it especially suitable. This preparation is a crystalline double salt produced during the manufacture of polyhydroxymonocarboxylic acid by oxidizing lactobiose with calcium hypobromide in the presence of calcium hydroxide. The double salt may be crystallized directly from the solution. To test the therapeutic efficacy of this preparation, two reasonably comparable groups of infants were studied. The infants who received the new double salt in one-half teaspoonful doses twice daily showed a complete change in the clinical picture with a uniform increase in the calcium content of the blood, and all the symptoms disappeared in an average period of slightly less than seven days. Similarly good results were obtained with this new preparation in a group of older children who from birth had had manifestations of nervous disturbances.

Serum Disease and Therapeutic Effect of Diphtheria Antitoxin.—Davidsohn and Hunt studied forty patients with so-called immediate or accelerated serum reactions, 164 patients with ordinary serum reactions and ninety-seven patients without any serum reactions. No difference was noted in the therapeutic effect on the patients with ordinary serum disease and on those without any serum reactions. On the other hand, the therapeutic results were distinctly less satisfactory and the incidence of complications was considerably higher in the patients with immediate serum reactions.

Bile Peritonitis in Infancy.—Caulfield reports two cases of bile peritonitis in infants in whom successful surgical treatment was possible even after the disease has persisted for some time. Both the infants had been apparently normal for about three weeks, at the end of which time they manifested signs of biliary obstruction—jaundice and bile-stained urine in one patient and acholic stools in the other. In each instance the infant was brought to a physician not because of jaundice, vomiting or pain but because of swelling of the scrotum. The jaundice was intermittent. On admission there were signs of a marked increase in intra-abdominal pressure—respiratory distress, pouting umbilicus, fluid in the scrotum and engorged superficial veins. The abdomen of each patient showed on percussion a shifting dulness. The temperatures were normal or subnormal. Both patients had acholic stools and their urine did not contain bile. The absence of bile pigments from both stools and urine, without jaundice, should immediately suggest that there is a rupture along the biliary tract and that bile is flowing freely into the peritoneal cavity. In both instances the disease was amenable to surgical treatment, in the first case actually and in the second theoretically. The first child recovered with a functionally perfect biliary tract after simple drainage in the region of the bile ducts. The surgeon suggested that the child may have had an accessory duct which functioned after operation, but his rapid recovery following simple drainage constitutes evidence very much against the existence of any extensive or serious abnormality. The second child had stenosis of the common duct, and at necropsy inspissated bile was found between the stenosis and the ampulla. Whether this inspissated bile was formed before or after the rupture is not known. There was a theoretical possibility of surgical repair, especially if an early diagnosis had been made. If repair of the ruptured common duct or anastomosis of the sac wall to the intestine had been technically difficult or impossible, perhaps a cholecystoduodenostomy with ties on the common duct or a drain to the region of the rupture might have saved the patient's life.

American Journal of Ophthalmology, St. Louis

19: 1053-1146 (Dec.) 1936

Aneurysm of Internal Carotid Artery with Atrophy and Compression of Optic Nerve. J. O. Wetzel, Lansing, Mich.—p. 1053.
Iritis Produced in Rabbits' Eyes by Intravenous Injection of Crude and Purified Cultures of Bacteria Isolated from Patients with Certain Inflammatory Eye Diseases: Preliminary Report. C. Berens, Edith L. Nilson and G. H. Chapman, New York.—p. 1060.
Tobacco Amblyopia; Alcohol Amblyopia: Report of One Uncomplicated Case of Each Condition. F. D. Carroll and C. R. Franklin, New York.—p. 1070.
Results of Surgery of Glaucoma. L. Bothman, Chicago, and M. J. Blaess, Marshalltown, Iowa.—p. 1072.
Ocular Changes in Multiple Sclerosis. D. Marshall and R. G. Laird, Ann Arbor, Mich.—p. 1085.
Glaucoma in Amblyopia. S. V. Abraham, Los Angeles.—p. 1094.
Rôle of Paracentesis in Ophthalmology. W. F. Hardy, St. Louis.—p. 1097.
Unilateral Congenital Anophthalmos with Orbitopalpebral Cyst. M. Rosenbaum, New York.—p. 1101.

American Journal of Surgery, New York

34: 403-638 (Dec.) 1936. Partial Index

Preoperative Estimation of Anesthetic and Surgical Risk. P. D. Woodbridge, Boston.—p. 410.
Choice of Anesthesia. L. F. Sise, Boston.—p. 419.
Endotracheal Anesthesia. I. W. Magill, London, England.—p. 450.
Carbon Dioxide Absorption Method for Inhalation Anesthesia: Its Development and Principles. E. A. Rovenstine, New York.—p. 456.
Anesthesia in Children. C. H. Robson, Toronto.—p. 468.
Etiology of Muscular Spasms During General Anesthesia. E. C. Rosenow and R. M. Tovell, Rochester, Minn.—p. 474.
Anesthetics and Liver Function. W. Bourne, Montreal.—p. 486.
*Ventricular Fibrillation in Anesthesia. A. E. Guedel, Los Angeles, and P. K. Knoefel, Louisville, Ky.—p. 496.
Regional Anesthesia: Agents and Methods. J. S. Lundy and E. B. Tuohy, Rochester, Minn.—p. 511.
Regional Anesthesia for Operations on Neck. R. M. Tovell, Rochester, Minn.—p. 531.
Brachial Plexus Block. E. B. Tuohy, Rochester, Minn.—p. 544.
Protective Action of Picrotoxin in Prolonged Surgical Anesthesia with Evipal. A. H. Maloney, Washington, D. C.—p. 571.
Evipal Anesthesia: Its Use in Proctology. B. Haskell and J. J. Chebren, Philadelphia.—p. 581.
Mortality of Spinal Analgesia: Based on an Analysis of Thirty Immediate Fatalities in a Series of 33,811 Cases. J. R. Veal and B. deK. Van Werden, New Orleans.—p. 606.

Ventricular Fibrillation in Anesthesia.—Guedel and Knoefel point out that ventricular fibrillation occurs without warning; it either passes in less than a minute or death results. The approach to a surgical operation and the induction of anesthesia provide favorable circumstances for its occurrence. The most likely time in anesthesia for the occurrence of ventricular fibrillation is in the stage of delirium immediately after consciousness is lost. It is most likely to occur in the periods of life when general physiologic activity is greatest; that is, between the ages of 5 and 30 years. Clinical recognition of the phenomenon depends largely on the appreciation of predis-

posing circumstances surrounding the case at hand. If the pulse stops without warning during the induction of anesthesia, the cause is probably ventricular fibrillation. Respiration stops almost immediately after the ventricles fibrillate. Unless the anesthetist has his finger on the pulse constantly, fibrillation will be well advanced before it is recognized. The respiratory cessation will probably be mistaken for one of the frequent respiratory pauses occurring at this stage of anesthesia and death occurs almost before the anesthetist is aware that anything is wrong. Embolism, acute cardiac dilatation and apoplexy might be confused with ventricular fibrillation, although in none of these will the pulse go from normal to nothing between two heart beats. Artificial respiration with oxygen should be instituted immediately, because one can never be sure at the time that circulation has ceased entirely. If the abdomen is open at the time of fibrillation, circulation may be maintained by rhythmic compression of the heart between the anterior thoracic wall and the hand, through the diaphragm. Ventricular fibrillation is preeminently the condition in which direct cardiac massage is indicated. If the condition is recognized as soon as it occurs, opening the abdomen in order to prosecute this procedure is justifiable. Prevention lies in holding down the activity of the sympathetic nervous system and thus the output of epinephrine from the adrenals, and the avoidance of any external stimuli during the induction of anesthesia. Any preanesthetic medication that will prevent sympathetic hyperactivity is of value. Any disturbance of the patient during induction should be avoided. Beginning the preparation of the operative field or the surgical procedure itself before anesthesia is complete is dangerous. Since it is known that the danger zone is the second stage of anesthesia, anesthesia should be carried through this stage as rapidly as possible. The use of epinephrine in amounts sufficient to control bleeding during general anesthesia is to be condemned. Levy and others have shown that ventricular fibrillation is produced much more easily under anesthesia with chloroform than with other anesthetic agents. Aside from placing chloroform first and ethyl chloride possibly second, the authors cannot classify the other anesthetic drugs with relation to the frequency of occurrence of this phenomenon.

American Journal of Tropical Medicine, Baltimore

16: 647-734 (Nov.) 1936

Malaria in India: Impressions from Tour. P. F. Russell, New York. —p. 653.
Nature of Immunity to Malaria in Its Relationship to Antimalarial Therapy. M. Ashford, Panama, Canal Zone.—p. 665.
Recent Observations on Origin of Schüffner's Granules. H. E. Hingst. —p. 679.
Status of Plasmodium Capistrani. R. D. Manwell, Syracuse, N. Y. —p. 685.
Clinicopathologic Studies of Leprosy in Brazil. H. H. Anderson, San Francisco; P. Cerqueira, Jeanette Van D. Anderson and H. Portugal. —p. 689.
Glucose Tolerance in Rat Leprosy. G. A. Emerson, Morgantown, W. Va.—p. 699.
Studies on Intestinal Parasites Among Wild Rats Caught in St. Louis. H. Tsuchiya and L. E. Rector, St. Louis.—p. 705.
Case of Echinococcosis in Oklahoma: Report on Discovery of Hydatid Cyst of Echinococcus Granulosus (Batsche, 1786) in Man. W. P. N. Canavan, Oklahoma City.—p. 715.

Annals of Internal Medicine, Lancaster, Pa.

10: 717-950 (Dec.) 1936

The Manner in Which Food Controls Bulk of Feces. R. D. Williams and W. H. Olmsted, St. Louis.—p. 717.
*Observations on Use of Acetyl Beta Methylcholine Chloride in Chronic Arthritis. D. Boyd, S. L. Osborne and D. E. Markson, Chicago. —p. 728.
Studies in Hodgkin's Disease: III. Clinical Application of Gordon Test (a Syndrome of Ataxia, Spasm and Paralysis Induced in Rabbits by Intracerebral Injection of Emulsified Hodgkin's Tissue). E. M. Chapman, Boston.—p. 742.
The Course of Hypertensive Heart Disease: I. Age of Onset, Development of Cardiac Insufficiency, Duration of Life and Cause of Death. N. Flaxman, Chicago.—p. 748.
The Problem of Rheumatism and Arthritis: Review of American and English Literature for 1935 (Third Rheumatism Review). P. S. Hench, Rochester, Minn.; W. Bauer, Boston; A. A. Fletcher, Toronto; D. Ghrist, Los Angeles; F. Hall, Boston, and T. P. White, Charlotte, N. C.—p. 754.

Use of Acetyl Beta Methylcholine Chloride in Arthritis.—Boyd and his co-workers used acetyl beta methylcholine by common ion transfer in the treatment of twenty-seven patients having arthritis. It was soon evident that certain less advanced arthritic patients derived more benefit than the far advanced. Those with evident circulatory disturbances of the extremities—those with cool, pale, moist and often cyanotic hands and feet—seemed to gain most from the treatment. All patients had had considerable previous medical treatment along the usual lines without much evident improvement. Acetyl beta methylcholine is not useful in arthritic patients with peripheral arteriosclerosis nor is it feasible to treat patients with well distributed skin changes. It seemed most helpful in those who (1) show the earlier changes of the rheumatoid type, with cool, damp and cyanosed extremities, (2) have moderate hypertrophic changes with paresthesias and sensitivity to cold and (3) have sciatica or other manifestations of irritation of the spinal nerve roots as a result of spinal arthritis. Many patients showed not only a marked increase of the pulse volume wave in the member treated locally by common ion transfer but also minor increases in pulse volume wave in the opposite untreated extremity. The hands treated showed in eight of the fourteen patients an increased flexibility in function and usefulness in work. The group of failures in treatment were in general the elderly, far advanced rheumatoid arthritic patients with bone changes and fibrosis. Striking relief of pain was afforded some cases, but as a record of therapeutic achievement in this respect the results are only fair. The striking therapeutic effect in the group is the decreased fatigability and the increased endurance. This was noted consistently in almost all patients who absorbed the drug and took a sufficient number of treatments. No satisfactory measure of such fatigue has been proposed, though indirectly metabolic studies may help. The authors believe that, if fatigue can often be controlled, in many instances pain can be relieved, physical activity increased and the morale of these patients raised considerably. It is this effect of mecholyl that impressed them most.

Annals of Otol., Rhinol. and Laryngology, St. Louis

45: 923-1208 (Dec.) 1936

Blastomycosis of Larynx. L. H. Clerf and C. J. Bucher, Philadelphia. —p. 923.
Mixed Tumors in Nose and Throat. P. G. Goldsmith and P. E. Ireland, Toronto.—p. 940.
Value of Roentgenography of Neck, with Especial Reference to Its Use in Diagnosis and Treatment of Laryngeal and Tracheal Obstruction. C. L. Jackson, Philadelphia.—p. 951.
Further Observations on Use of Specific Immune Serums in Treatment of Streptococcic Infections. H. L. Baum, Denver.—p. 969.
*Vertigo in Brain Tumors, with Especial Reference to Results of Labyrinth Examination. E. A. Spiegel, Philadelphia, and A. Alexander, Vienna, Austria.—p. 979.
Otomycosis: Investigation of Effective Fungicidal Agents in Treatment. R. McBurney and H. B. Searcy, Tuscaloosa, Ala.—p. 988.
Intralingual Thyroid: Discussion with Report of Large Struma Presenting in Anterior Part of Tongue. R. S. Rosedale, Buffalo.—p. 1009.
Anomaly of Lateral Sinus: Report of Case. G. D. Hoople, Syracuse, N. Y.—p. 1019.
Differences in Loudness Response of Normal and Hard-of-Hearing Ear at Intensity Levels Slightly Above Threshold. S. N. Reger, Iowa City.—p. 1029.
Osteomyelitis of Skull Originating in Ethmoid Area. W. F. Clevenger and H. L. Norris, Indianapolis.—p. 1040.
Management of Labyrinthine Infection. S. L. Shapiro, Chicago.—p. 1045.
Operative and Nonoperative Treatment of Ethmoiditis. J. D. Kelly, New York.—p. 1050.
Hypothyroidism in the Practice of Otorhinolaryngology. B. L. Bryant, Cincinnati.—p. 1060.
Disease—or Defamation? C. K. Carpenter, New York.—p. 1069.
Prophylaxis in Parasigmatism. C. H. Voelker, Hanover, N. H.—p. 1082.

Vertigo in Brain Tumors.—The observations of Spiegel and Alexander on brain tumors seem to corroborate the assumption of a representation of the labyrinth in the cerebral cortex, particularly in the temporal lobe. Parts of the frontal lobe, especially the centro-opercular region, must also be taken into consideration as a place at which vestibular and spinal impulses joined in the subcortex (cerebellum-ruber system) may enter. The conception that vertigo in brain tumors is only a general symptom of increased intracranial pressure seems to need a revision. In a large number of cases symptoms of choked labyrinth, hyperexcitability of this organ, differences in excitability between the two sides, nystagmus, diplopia and cerebellar disturbances are found, and the appearance of vertigo is explainable as due to these effects of increased intracranial pressure. Yet there remains a group of cases in which such an effect of

pressure on the labyrinth or on the brain stem is absent. In these cases, at least, it seems not unreasonable to assume that the vertigo may appear as a local symptom of the cerebral cortex due to direct lesion (stimulation) of the aforementioned cerebral areas, or due to pressure on these foci by tumors in neighboring regions. In general it seems that tumors close to the sylvian fissure induce vertigo more easily than do tumors more distant from this fissure.

Annals of Surgery, Philadelphia

104: 961-1130 (Dec.) 1936

Stage Operations in Severe Hyperthyroidism. F. H. Lahey, Boston. —p. 961.
*Hyperparathyroidism in Siblings. L. Goldman and F. S. Smyth, San Francisco.—p. 971.
Cyclopropane Anesthesia in Thyroidectomy. A. Goetsch, Brooklyn. —p. 982.
The Problem of Myositis Ossificans Progressiva. W. Dobrzaniecki, Lwów, Poland.—p. 987.
Division of Ribs as an Aid in Closing Diaphragmatic Hernia. C. E. Bird, Louisville, Ky.—p. 993.
Diverticula of Vermiform Appendix: Study Based on Thirty Cases. D. C. Collins, Los Angeles.—p. 1001.
Use of Glyceryl Trinitrate (Nitroglycerin) for Control of Pain Following Cholecystectomy. J. M. McGowan, W. L. Butsch and W. Walters, Rochester, Minn.—p. 1013.
*Operative Procedure for Right-Sided Ulcerative Ileocolitis. A. A. Berg, New York.—p. 1019.
Surgical Treatment of Five Hundred Hernias. F. Glenn and A. F. McBride Jr., New York.—p. 1024.
Intraperitoneal Approach for Repair of Inguinal Hernia. L. E. Sutton, Syracuse, N. Y.—p. 1030.
Correlation of Pathologic and Roentgenologic Findings in Tuberculosis and Pyogenic Infections of Vertebrae: Fate of Intervertebral Disk. E. L. Compere and M. Garrison, Chicago.—p. 1038.
Giant Cell Tumors of Jaws. S. G. Major, Pittsburgh.—p. 1068.
Subchondral Tuberculous Sequestrums. J. G. Finder, Chicago.—p. 1080.
Surgical Treatment of Human Bites. T. M. Lowry, New York. —p. 1103.

Hyperparathyroidism in Siblings.—The clinical, metabolic and roentgenologic observations associated with the classic type of von Recklinghausen's disease are illustrated by the two cases reported by Goldman and Smyth. Hypercalcemia was evident in both. Conversely, the phosphorus was lower than normal. One patient had renal calculi and the other did not, although the excessive urinary loss of calcium and phosphorus in both patients (a sister and a brother) would presumably favor the formation of stones. Perhaps the extent of the process in the first patient would suggest a disturbance of metabolism of longer standing, which would favor lithiasis. The transition from the hypercalcemia of hyperparathyroidism to the hypocalcemia of hypoparathyroidism was observed postoperatively in the second patient. It is important to meet the immediate reversal of function following parathyroidectomy by a diet low in phosphorus and high in calcium, which helps to guard against further depression of the calcium. While this is ordinarily accomplished by administration of calcium, the authors believe that a careful restriction of phosphorus is of additional benefit. Additional calcium was not given in the cases cited, as a minimal intake was desired to allow detection of the endogenous (endocrine) factors. The study illustrates the shift of the excretion of calcium from urine to stool, and the change to a positive balance. That this is a temporary phenomenon must be admitted, since follow up has shown no persistent tetany and no hypocalcemia. It is likely that further study might show a readjustment to that of the normal adult metabolism. An erroneous diagnosis of giant cell tumor was made roentgenologically in one and microscopically, after biopsy, in the other patient. Giant cell tumor is usually situated asymmetrically at the epiphyses of the long bones and is usually single rather than multiple. The giant cell variant of fibrous osteitis may occur in the shaft of the bone, subperiosteally or centrally, and is associated with generalized demineralization of the skeleton and altered calcium and phosphorus metabolism. This lesion is more likely to be multiple. If a small portion of surrounding bone proper is included in the biopsy, the histologic picture of fibrous osteitis should be evident enough to suggest hyperparathyroidism in cases of giant cell variant. The symptoms and signs in both patients disappeared rapidly following the removal of the parathyroid tumors, and a deposition of minerals in the skeleton took place within a short time. A markedly negative calcium balance became positive after parathyroidectomy, indicating that reconstruction of the skeleton was taking place. In time, a normal negative balance may be expected to supersede this. The symptoms of easy fatigability underwent the most marked subjective improvement. The presence of malacic disease in two members of the same family does not necessarily point to a diagnosis of fragilitas ossium or to any other type of familial skeletal disturbance.

Operation for Right-Sided Ulcerative Ileocolitis.—To put the diseased colon at rest and to irrigate and cleanse it, Berg has carried out the following procedure in five cases: A left-sided transrectus incision is made extending 3 or 4 inches upward from the symphysis; the terminal ileum is identified and delivered out of the wound. The healthy sigmoid is similarly delivered into the abdominal wound. The healthy ileum, as near to the ileocecal valve as is possible, is cut completely across and its mesentery is divided. Both ends are closed by two or three tiers of sutures; an inner chromic catgut suture is made through all the coats, reinforced by one or two layers of interrupted linen or chromic catgut sutures. The proximal end of the ileum is joined to the lower sigmoid just above the peritoneal reflection by a side-to-side anastomosis. Several inches above this side-to-side anastomosis the sigmoid is cut completely across, the distal end is closed by a row of chromic catgut sutures reinforced by one or two layers of linen or catgut, and the proximal end is tied off with a heavy silk suture, thoroughly phenolized and brought out through the upper angle of the wound. The rest of the abdominal wound is closed in layers. The heavy silk suture around the proximal end of the sigmoid is left in situ for from forty-eight to seventy-two hours and then removed, leaving a fistula in the proximal end of the sigmoid. The fecal stream is thus entirely diverted into the lowermost sigmoid and rectum, and the fistula in the sigmoid permits the free drainage of the products of inflammation from the diseased colon. After from ten to fourteen days the colon is irrigated through the sigmoid fistula. The entire colon and the diseased portion of the ileum have been removed subsequently in two cases.

Archives of Otolaryngology, Chicago

24: 687-810 (Dec.) 1936

Sympathetic Innervation of Nose: Research Report. O. Larsell and R. A. Fenton, Portland, Ore.—p. 687.
Lymphatic Pathways from Nose: Research Report. O. Larsell, with collaboration of R. A. Fenton, Portland, Ore.—p. 696.
Substances Resembling Ephedrine in Experimental and in Clinical Sinusitis: Research Report. R. A. Fenton and O. Larsell, Portland, Ore.—p. 714.
*Conduction Deafness: Statistical Observations. A. Ciocco, Baltimore. —p. 723.
Method for Early Detection of Otosclerosis: Study of Sounds Well Above Threshold. E. P. Fowler, New York.—p. 731.
Effect of Zinc Ionization and Galvanic Current on Reaction of Nasal Mucosa to Vasomotor Drugs. W. F. Wenner and J. H. Alexander, St. Louis.—p. 742.
Staphylococcus in Relation to Sinusitis, Bronchitis and Bronchiectasis. F. D. Woodward, University, Va.—p. 753.
Treatment of Hemorrhage in Nonhemophilic Patients with an Estrogenic Substance. C. J. Heinberg, Pensacola, Fla.—p. 758.

Conduction Deafness.—Ciocco discusses data on the acuity of hearing by bone conduction for 516 patients with a conductive type of impairment (acuity by bone conduction being better than that by air conduction). The data have been statistically analyzed to determine whether or not the acuity of hearing by bone conduction is related in any way to age, the appearance of the tympanic membrane, tinnitus, a history of familial deafness and the degree of impairment of hearing by air conduction. Prolonged bone conduction time was found in 26.7 per cent of the cases, normal bone conduction time in 66.1 per cent and shortened bone conduction time in 7.2 per cent. Those with prolonged bone conduction time were, on the average, the youngest; those with shortened bone conduction time were the oldest. On the average, the acuity of hearing by air conduction of persons with prolonged and with normal bone conduction time was similar and was more acute than in patients with shortened bone conduction time. A normal tympanic membrane was observed with greater relative frequency in persons with prolonged bone conduction time, while a perforated tympanic membrane was found relatively oftener in those with shortened bone conduction time. The incidence of tinnitus was practically the same for all groups. The incidence of a family history of deafness was highest in those with prolonged bone

conduction time and lowest in those with shortened bone conduction time. The differences are statistically significant. The effect of age on the acuity of hearing by bone conduction appears to be the most noteworthy finding. Prolonged bone conduction time in all probability represents the upper "tail" of the frequency distribution of the normal variation. The fact that the persons with such bone conduction were the youngest, on the average, may be regarded as confirming the hypothesis that acuity of hearing by bone conduction is associated with some factor or factors other than the condition of cochlear nerve and end organ.

Archives of Pathology, Chicago

22: 729-866 (Dec.) 1936

Reticulo-Endotheliosis. G. Ritchie and O. O. Meyer, Madison, Wis.—p. 729.
Studies of Serum Electrolytes: XI. Blood Changes Following Death from Contact with Alternating Current of High Intensity. F. W. Sunderman and E. O. Harper, Philadelphia.—p. 738.
*Tubular Tuberculosis of Liver. K. Rosenkranz and L. D. Howard, San Francisco.—p. 743.
Genesis of Intestinal Infarction Following Embolization of Superior Mesenteric Artery. L. Loeffler, Brooklyn.—p. 755.
*Inhibitory Action of Sodium Chloride on Skin Necrosis Produced by Staphylococcus Toxin. R. H. Rigdon, Nashville, Tenn.—p. 763.
Experimental Pulmonary Abscess in Monkeys. C. Weiss and Marian C. Shevky, San Francisco.—p. 770.
Rapid, Reliable and Simple Technic for Simultaneous Dehydration and Infiltration of Human Tissues. R. J. Lebowich, Gloversville, N. Y.—p. 782.
Effect of Staphylococcus Toxin on Dog's Blood Pressure. R. H. Rigdon, Nashville, Tenn.—p. 806.
Photodynamic Effects of Fluorescent Substances in Living Kidney. E. Singer, New York.—p. 813.
Size and Weight of Normal and of Pathologic Prostate Gland. M. Van B. Teem, Rochester, Minn.—p. 817.

Tuberculosis of Liver.—Rosenkranz and Howard encountered three cases of tuberculosis of the bile ducts in their necropsy service. Necropsy of the first patient revealed that the man died of an advanced tuberculosis of the spine, with a miliary spread into the inner organs complicated by tuberculous abscesses along the intrahepatic bile ducts. The second patient was a young native Filipino in whom, without signs of pulmonary infection, tuberculosis of the bone developed which was complicated by tuberculosis of the bile ducts and of the liver. The site of the primary infection must be assumed to have been the intestine. The last case was one of typical progressive pulmonary and extensive intestinal tuberculosis with caseation of the mesenteric, peribronchial and periportal lymph nodes, complicated by a secondary tuberculous cholangeitis with abscess formation. The microscopic picture of the liver in these cases shows a rupture of caseous tubercles into the bile ducts from the periportal tissue. The excretion of virulent tubercle bacilli with the bile is always due to microscopic ruptures of this kind. Development of tubular tuberculosis of the liver is favored by an early generalized spread of the primary infection, especially when the latter occurs in the intestine. This type of tuberculosis is usually found in young children and in races that do not have high resistance against infection by Koch's bacillus. Intestinal primary infection tends to spread easily and to retain virulent bacilli for a long time.

Action of Sodium Chloride on Skin Necrosis.—Rigdon treated nineteen rabbits intradermally in five areas on the right and on the left side with from 1.5 to 2.5 cc. of an 0.85 per cent (right) and a 5 per cent (left) solution of sodium chloride. Into each bleb made by the salt solution, from 0.1 to 0.2 cc. of staphylococcus toxin was injected at intervals varying from immediately to two hours. Sixteen rabbits showed a decrease in the extent of necrosis in the areas previously receiving the 5 per cent solution. The most pronounced degree of inhibition occurred when the interval between the injection of the 5 per cent solution and the injection of the toxin was from five minutes to one hour. The location of the necroses with regard to the points of toxin injection in the areas receiving the one concentration of sodium chloride was different from that in the areas receiving the other. In the areas treated with the 5 per cent sodium chloride solution, necrosis occurred at the sites of toxin injection and also frequently inferior to these points. The skin between these two necrotic regions was macroscopically normal.

Archives of Surgery, Chicago

33: 913-1116 (Dec.) 1936

Differential Analysis of Bile Acids in Human Gallbladder Bile. R. Colp and H. Doubilet, New York.—p. 913.
*Ossification: Influence of Mineral Constituents of Bone. J. D. Bisgard, Omaha.—p. 926.
Plan for Treatment of Cancer with Small Quantities of Radium. G. T. Pack, New York.—p. 940.
Hydrodynamics of Relief of Distention in Gastro-Intestinal Tract by Suction Applied to Inlying Catheters J. R. Paine, Minneapolis.—p. 995.
Hernia into Umbilical Cord and Related Anomalies. L. A. Thunig, Brooklyn.—p. 1021.
Quantitative Studies on Congenital Clefts of Lip. W. T. Peyton and H. P. Ritchie, Minneapolis.—p. 1046.
*Unusual Cartilaginous Tumor Formation of Skeleton. E. Freund, Venice, Fla.—p. 1054.
A Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Berlin, Germany; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, Rochester, Minn.; J. T. Priestley, Rochester, Minn., and V. J. O'Conor, Chicago.—p. 1078.

Ossification: Influence of Mineral Constituents of Bone.—The results of Bisgard's investigation indicate that in experimental animals: 1. The synthetic salts of bone, calcium carbonate, calcium phosphate and magnesium phosphate have no influence on osteogenesis or ossification. In great concentration and in the presence of tissue not in itself osteogenic but recognized as ossifiable, these salts failed to give rise to the formation of bone, and in the presence of osteogenic tissue they appeared not to alter the normal course of ossification. 2. Bone, regardless of its viability, has a favorable influence on ossification. This was true of partially viable bone, boiled bone and bone ash. Transplants of the former invariably initiated ossification in the fibrous tissue surrounding them. This was true also of boiled bone, but to a much lesser degree, and, although it did not occur with the use of bone ash under similar circumstances, ossification did take place in transplants of fibrous tissue and epithelium from the bladder which were bathed in bone ash. Since bone was not formed in this type of transplant in the rabbit in mediums of either normal aqueous or bone salts, it is deduced that bone ash possesses some factor favorable to ossification which is not present in bone salts. It would seem likely, as suggested by Watt, that calcium as it exists in bone exists in a physiochemical or structural form more suitable for use in the process of ossification.

Unusual Cartilaginous Tumor Formation of Skeleton.—Freund reports four cases of cartilaginous tumor of the skeleton, which represent in part unusual forms of otherwise well known conditions (enchondroma, single osteochondroma and multiple cartilaginous exostoses) and in part an apparently rare form of a multiple intra-articular tumor formation which, to his knowledge, has not yet been described. There is one case of a true intra-articular osteochondroma, which developed in more than one joint on the basis of a peculiar hyperplastic change of joint cartilage and which had to be differentiated from similar formations as they develop typically in persons with hypertrophic arthritis and from other conditions usually considered neoplastic changes of the joint capsule, such as chondromatosis of the joints. Besides the cartilaginous component, a considerable amount of bony tissue was present. One is justified in speaking of the growth as a cartilaginous tumor, despite the fact that in some instances the bony component is prevalent, mainly because the cartilaginous portion represents the real active element in the tumor, the cellular proliferation of which results in the increase in size. The bony tissue replaces the cartilage; its significance is therefore merely secondary.

Canadian Public Health Journal, Toronto

27: 421-476 (Sept.) 1936

Liver Therapy in Treatment of Pernicious Anemia. E. W. McHenry, Toronto.—p. 421.
Recent Trends in Mortality from Pernicious Anemia. A. H. Sellers, Toronto.—p. 428.
Multiple Specimens for Central Laboratory Diagnosis of Enteric Infections. M. H. McCrady, L. P. Lebeau, R. Boudrias and J. M. Desranleau, Quebec.—p. 439.
Planning a Generalized Public Health Nursing Program. L. M. McDonald, St. Mary's Ont.—p. 445.
Value of Records and Statistics to the Medical Officer of Health. D. V. Currey, St. Catharines, Ont.—p. 452.

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Florida Medical Association Journal, Jacksonville

23: 259-306 (Dec.) 1936

Bloody Pleural Effusion. J. W. Merritt, Jacksonville.—p. 271.
Progress Toward Lower Maternal Morbidity and Mortality. W. C. Roberts, Panama City.—p. 272.
Sterility: Diagnosis and Treatment. F. Richards, Jacksonville.—p. 277.
Use of Protamine Insulin in the Hospital Management of Diabetes Mellitus. A. W. Lewis Jr., St. Augustine, and H. Bowcock, Atlanta, Ga.—p. 282.

Johns Hopkins Hospital Bulletin, Baltimore

59: 393-456 (Dec.) 1936

Plasma-Coagulating Properties of Staphylococci. A. M. Fisher, Baltimore.—p. 393.
Fibrinolytic Properties of Staphylococci. A. M. Fisher, Baltimore.—p. 415.
*Peculiar Granules in Cells of Liver and Adrenal in Infections. F. L. Santee, Baltimore.—p. 427.
Clinical and Pathologic Findings in Congenital Malformations of Heart Due to Defective Development of Right Ventricle Associated with Tricuspid Atresia or Hypoplasia. Helen B. Taussig, Baltimore.—p. 435.
Nail Fold Capillaries in Negroes: Note. J. Bordley 3d, M. H. Grow and W. B. Sherman, Baltimore.—p. 447.

Granules in Cells of Liver in Infections.—Santee calls attention to the fact that in pathologic sections of the human liver and adrenal cortex fixed in formaldehyde or Zenker's fluid and stained with hematoxylin and eosin there appear in the cytoplasm oval, rod-shaped or club-shaped granules dark with hematoxylin. Their average size is about 1 by 3 microns, but they vary greatly. Their outlines are irregular. All the cells may be thickly dotted with them or there may be only three or four granules in an occasional cell. In the cells of the adrenal cortex they may be fewer than in the liver cells. They are stained red with pyronin. They have no special station in the lobule of the liver or in the adrenal cortex. They are often indiscriminately arranged within the cells. Since the granules occur very frequently and are quite distinct with the high, dry objective, they must have been seen by many observers. And yet little or no mention of them has been made in the literature.

Journal of Biological Chemistry, Baltimore

116: 457-816 (Dec.) 1936. Partial Index

Studies on Enzyme Action: L. Estimation of Pepsin and Trypsin in Yeast. M. Hecht and Helen Civin, New York.—p. 477.
Relationship of Vitamin C to Glucose Tolerance in the Guinea-Pig. A. Sigal and C. G. King, Pittsburgh.—p. 489.
Vitamin C Studies in the Rat and Guinea-Pig. J. L. Svirbely, Pittsburgh.—p. 543.
Studies on Biologic Oxidations: VII. Oxidation of Ascorbic Acid in Biologic Fluids. E. S. G. Barron, A. G. Barron and F. Klemperer, Chicago.—p. 563.
Studies on Ketosis: VIII. Quantitative Studies on Oxidation of Ethyl Esters of Fatty Acids. H. J. Deuel Jr., Lois F. Hallman, J. S. Butts and Sheila Murray, Los Angeles.—p. 621.
Simplified Method for Preparation of Crystalline Progesterone from Pig Ovaries. W. M. Allen and C. Goetsch, Rochester, N. Y.—p. 653.
Relation of Glycogen, Fat and Protein to Water Storage in Liver. A. Kaplan and I. L. Chaikoff, Berkeley, Calif.—p. 663.
*Comparison of Antitryptic Activity of Egg White with Its Capacity to Produce a Characteristic Nutritional Disorder. Helen T. Parsons, with cooperation of Eunice Kelly, Madison, Wis.—p. 685.
Hydroxylated Acids of Fats: Improved Method of Determination. P. G. Hafner, R. H. Swinney and E. S. West, Portland, Ore.—p. 691.
Studies on Glutathione Content of Blood in Nutritional Anemia. M. O. Schultze and C. A. Elvehjem, Madison, Wis.—p. 711.
Vitamin C in Vegetables: IV. Ascorbic Acid Oxidase. Z. I. Kertesz, R. B. Dearborn and G. L. Mack, Geneva, N. Y.—p. 717.
Inulin and Creatinine Clearances in Dogs, with Notes on Some Late Effects of Uranium Poisoning. A. N. Richards, B. B. Westfall and P. A. Bott, Philadelphia.—p. 749.
Provitamin D Potency of Some Sterol Derivatives. Elizabeth M. Koch and F. C. Koch, Chicago.—p. 757.
Water and Electrolyte Distribution Among Plasma, Red Blood Cells and Muscle After Adrenalectomy. A. H. Hegnauer and E. J. Robinson, Columbus, Ohio.—p. 769.
Water and Electrolyte Distribution Between Plasma and Red Blood Cells Following Intraperitoneal Injections of Isotonic Glucose. E. J. Robinson and A. H. Hegnauer, Columbus, Ohio.—p. 779.

Antitryptic Activity of Egg White.—Parsons prepared crude concentrates of an antitrypsin from a commercially fermented dried egg white which has been shown to be highly active in producing pellagra-like lesions in rats and other animals. These concentrates showed no corresponding increase in the capacity to produce the nutritional disorder but permitted the healing of the characteristic lesions when the diets incorporating them held a much higher concentration of antitrypsin than did the physiologically injurious diets carrying the egg white or extracted residues. The pellagra-like syndrome due to egg white is not attributable to the antitryptic content of this substance.

Journal of Nutrition, Philadelphia

12: 535-682 (Dec. 10) 1936

Differentiation Between Vitamin G and an Insoluble Factor Preventing Pellagra-like Syndrome in Chicks. A. T. Ringrose, Harrison, N. J., and L. C. Norris, Ithaca, N. Y.—p. 535.
Differentiation Between Vitamin G and Soluble Factor Preventing Pellagra-like Syndrome in Chicks. A. T. Ringrose, Harrison, N. J., and L. C. Norris, Ithaca, N. Y.—p. 553.
Distribution and Properties of Anti-Gizzard-Erosion Factor Required by Chicks. H. R. Bird, O. L. Kline, C. A. Elvehjem, E. B. Hart and J. G. Halpin, Madison, Wis.—p. 571.
Use of Ten-Day Period for Assay of Vitamin B by Rat Growth Technic. F. W. Schlutz, Chicago, and Elizabeth M. Knott, Iowa City.—p. 583.
*Quantitative Study of Utilization and Retention of Vitamin B by Young Children. Elizabeth M. Knott, Iowa City.—p. 597.
Specific Dynamic Action of Butter Fat and of Superimposed Sugar. J. R. Murlin, A. C. Burton and W. M. Barrows Jr., Rochester, N. Y.—p. 613.
Rate of Ketogenesis in Human Subjects on High Fat Diets, as Influenced by Different Sugars. J. R. Murlin, E. S. Nasset, W. R. Murlin and R. S. Manly, Rochester, N. Y.—p. 645.
Availability of *d*(−)-Lysine for Growth. C. P. Berg, Iowa City.—p. 671.

Retention of Vitamin B by Children.—Knott has studied the utilization of vitamin B through biologic assay with rats of the amounts of vitamin B in the food and excreta of children receiving weighed diets. A total of twenty-three balance studies have been completed with eight children from 4 to 7 years of age. The children, who were selected from private homes and from a county juvenile home, were apparently in normal health. While being studied they were under constant supervision by nurses trained in metabolism technic. The utilization of vitamin B as affected by various levels of ingestion has been studied by comparing the retentions of the children during twenty-three metabolism periods. The dried food aliquots, dried feces and concentrated urine from the children were assayed for their vitamin B content according to standardized technic. The unit of vitamin B selected as being most suitable to the short period type of assay employed was the quantity of vitamin B causing 1 Gm. of gain. This unit is approximately equal to 2 Chase-Sherman units. Increasingly higher retentions were obtained with higher intakes for each level of ingestion studied. On the basis of the ingestions giving the highest retentions, the optimal requirement of vitamin B by young children is estimated to be 20 units per kilogram of body weight, or about 40 Chase-Sherman units per kilogram daily.

Journal of Pediatrics, St. Louis

9: 717-868 (Dec.) 1936

Study of 244 Prematurely Born Infants. Ethel C. Dunham, Washington, D. C., and P. F. McAleney Jr., New Haven, Conn.—p. 717.
Lipoid Factor in Glycogen Storage Disease. C. Krakower, Boston.—p. 728.
Angiomas in Premature Infants. A. C. Rambar, Chicago.—p. 744.
*Sodium Chloride in Treatment of Nocturnal Enuresis in Children. W. Rosenson, New York, and Rebecca Liswood, Brooklyn.—p. 751.
Continuous Intravenous Method of Serum Administration: Case Reports. N. Silverthorne, Toronto.—p. 755.
Puberty Mastitis. P. Rosenblum, Chicago.—p. 758.
*Significance of Diminution of Spinal Fluid Sugar in Tuberculous Meningitis. M. Weichsel and Gertrud Herzger, New York.—p. 763.
Twisted Ovarian Cysts in Children: Report of Case in a Ten Year Old Child. M. S. Mazel and L. J. Halpern, Chicago.—p. 771.
Spontaneous Rupture of Liver in a Child with Complete Recovery. C. E. Bradley and D. L. Garrett, Tulsa, Okla.—p. 776.
Further Roentgenographic Studies of Sella Turcica in Abnormal Children. M. B. Gordon and A. L. L. Bell, Brooklyn.—p. 781.
Meningitis Due to Morgan Bacillus: Report of Case. R. H. Mitchell, Washington, D. C.—p. 791.
Citrated Transfusion in Infants and Children. S. Hirsch, New York.—p. 795.

Sodium Chloride in Treatment of Nocturnal Enuresis.—Rosenson and Liswood treated twenty-eight cases of nocturnal enuresis by a dietetic regimen with sodium chloride: successful results were obtained in all but one, in which the child refused to cooperate. Before this regimen is instituted in any given case, any underlying physical or psychologic condition that might account for the bed wetting should be treated. If such attempts fail, the sodium chloride treatment offers an effective method. The child is given his regular diet during the day. Until noon he is allowed to take as much fluid as he desires; after that, fluids are somewhat limited until 4 p. m. At that time he is offered his last drink of water or milk until

the following morning. For supper at 5:30 he is served with food containing as little water as possible. Such dry food includes meat, fish, egg, bread, butter, cheese and crackers. When the child is already in bed for the night and all his wants and requests have been attended to, he is given a sandwich containing about 5 Gm. of salt. The salt is given most effectively when combined with fat or meat abundant in binding tissue. Under such conditions the salt is absorbed gradually and the restraining influence on the discharge of urine is prolonged. Measured quantities of salt butter, ham, bacon, boned herring, boneless salt codfish, Swiss cheese, smoked salmon and salt can be used for the fillings. To make the herring or fish more palatable, chopped hard-boiled egg or raw scraped apple may be added. At the end of about two months of this regimen cereal, vegetables and some fruit were added gradually. This more liberal plan was continued for two months longer, after which the salt was decreased slowly. If bed wetting occurred on the reduction of the salt intake, it became necessary for a while to give a larger portion of a salty sandwich. In most cases the reduction of the salt intake was gradually accomplished without any recurrence of the nocturnal enuresis.

Diminution of Spinal Fluid Sugar in Tuberculous Meningitis.—Weichsel and Herzger observed the diagnostic value of spinal fluid sugar in cases of tuberculous meningitis. The method used for the examination of the spinal fluid sugar was that of Jensen and Hagedorn. A progressive diminution of the spinal fluid sugar was found from the time of first observation to the fatal termination of the cases. In this decline there is in many cases a slight increase about two weeks before death, and then a final drop of the sugar content. The authors feel that the diminution of the spinal fluid sugar is an early diagnostic sign, since in several cases the value of the sugar showed a decline from twenty-five to thirty days before the death of the patient. In most cases the decrease in the sugar content follows a rise in globulin and an increased cell count. Following the intraspinal injection of a 5 per cent solution of dextrose in children with tuberculous meningitis, a response in blood sugar was observed, which can be compared with that found after intramuscular injection or after absorption of sugar from the intestinal tract. The sugar content of the cerebrospinal fluid at the end of a spinal puncture gave almost the same value as at the beginning, and a repetition of the puncture after one hour usually gave no higher amounts. After an artificial increase of the blood sugar, the ratio between blood and spinal fluid sugar remained the same. The absolute augmentation of the dextrose in the cerebrospinal fluid was very low. The experiments tend to show that the chief cause of the diminution of sugar is not an increased glycolysis but rather a disturbance of the barrier between blood and spinal fluid.

Journal of Pharmacology & Exper. Therap., Baltimore

58: 361-492 (Dec.) 1936

Actions of Kurchicine, Alkaloid of Holarrhena Antidysenterica. I. Bakhsh, Oxford, England.—p. 361.
Pharmacologic Actions of Conessine and Isoconessine. I. Bakhsh, Oxford, England.—p. 373.
Explanation of Duodenal Activity. W. J. R. Camp, Chicago.—p. 393.
Liver Preparation Protecting Against Necrosis from Chloroform or Carbon Tetrachloride Administration. J. C. Forbes, R. C. Neale and J. H. Scherer, Richmond, Va.—p. 402.
*Pharmacodynamic Study of Autonomic Nervous System in Normal Men: Effects of Intravenous Injections of Epinephrine, Atropine, Ergotamine and Physostigmine on Blood Pressure and Pulse Rate. H. Freeman and H. T. Carmichael, Worcester, Mass.—p. 409.
Studies of Chronic Morphine Poisoning in Dogs: VI. Effect of Increasing Tissue Oxidations by Dinitrophenol on Excretion of Morphine in Tolerant and Nontolerant Dogs. O. H. Plant and D. Slaughter, Iowa City.—p. 417.
Toxicity of Rhodium. O. H. Plant, Iowa City.—p. 428.
Detoxification of Gaseous Hydrocyanic Acid. J. N. Etteldorf, Memphis, Tenn.—p. 431.
Properties of Physiologically Active Substance in Body Resulting from Administration of Acetyl-Beta-Methylcholine Chloride by Iontophoresis. W. F. Alexander and A. J. Kotkis, St. Louis.—p. 439.
Comparison of Minimal Fatal Doses of Selenium, Tellurium, Arsenic and Vanadium. K. W. Franke and A. L. Moxon, Brookings, S. D.—p. 454.
Pharmacologic Action of Deuterium Oxide: I. Toxicity and Symptoms; Metabolic Rate; Water Exchanges. H. G. Barbour and Jane Trace, New Haven, Conn.—p. 460.

Effects of Drugs on Autonomic Nervous System.—Freeman and Carmichael observed the reactions of blood pressure and pulse rate in twenty-four male subjects to the intravenous administration of epinephrine, atropine, physostigmine and ergotamine. The administration of all four drugs resulted in a significant rise in systolic blood pressure of varying intensity and duration. The diastolic blood pressure also underwent a significant increase with the exception of epinephrine, in which case pressor and depressor responses were so equally distributed that the net change was negligible. Epinephrine, atropine and physostigmine each resulted in a significant increase in pulse rate, while ergotamine caused a significant slowing of the heart rate. No significant relationship was found in the reaction of the systolic or diastolic pressure or pulse rate: to the magnitude of their control readings, to one another after the injection of a single drug or to one another in a comparison of the responses to several drugs. This lack of relationship was due to individual variability rather than to inconsistency of the basal blood pressure and pulse rate.

Journal of Urology, Baltimore

36: 599-808 (Dec.) 1936

Hemorrhagic Cyst of Kidney. J. D. Barney, Boston.—p. 602.
*Simple Method for Doing Nephropexy. C. M. McKenna, Chicago.—p. 609.
Ureteral and Renal Complications of Carcinoma of Cervix: Study of 257 Cases. R. C. Graves, C. J. E. Kickham and I. T. Nathanson, Wrentham, Mass.—p. 618.
Roentgen Therapy in Treatment of Bladder Tumors. A. E. Bothe, Philadelphia.—p. 643.
Grading of Epithelial Tumors of Urinary Bladder: Study of Cell Types and Methods of Grading of Cases in Carcinoma Registry of the American Urological Association. R. O. Dart, Washington, D. C.—p. 651.
*Infiltrating Carcinoma of Bladder. J. A. C. Colston and W. F. Leadbetter, Baltimore.—p. 669.
Cystitis Emphysematosa: Case Report and Review of Literature. N. L. Burrell, Springfield, Ohio.—p. 690.
Vesico-Intestinal Fistula. C. C. Higgins, Cleveland.—p. 694.
"The Cord Bladder": Its Definition, Treatment and Prognosis When Associated with Spinal Cord Injuries. D. Munro, Boston.—p. 710.
Diabetic (Cord) Bladder. R. D. Gill, Wheeling, W. Va.—p. 730.
Suprapubic Cystotomy for Drainage: Technic and Results. M. L. Boyd, Atlanta, Ga.—p. 740.
How Prevalent Are Smegma Bacilli? Their Alleged Importance as a Confusing Factor in Examination of Urine for Tubercle Bacilli by Smear and Centrifugal Method. H. S. Jeck and Charlotte Hanley, New York.—p. 764.
Masturbation and Impotence from Urologic Standpoint. M. Huhner, New York.—p. 770.
Surgery of Genital Elephantiasis (Nontropical). E. M. Watson, Buffalo.—p. 786.

Simple Method for Doing Nephropexy.—McKenna believes that pain is the first indication for nephropexy. It may be acute, chronic or periodic. In carrying out his procedure he has the patient lie on the side with the leg next to the table flexed at a right angle and the upper leg straight. A V-shaped incision is made through the lumbar fascia with the apex at about the level of the ninth or tenth rib and the base in the middle of the twelfth rib. The flap should be just long enough to make implantation into the kidney parenchyma. The fascia, to make the implant, may be brought between the eleventh and twelfth ribs or it may be brought over the last rib with the implant directed into the kidney parenchyma. The incision into the kidney parenchyma is not more than 0.5 cm. deep and 1.5 cm. long. At this point partial decapsulation is done around the incision into the parenchyma. This permits the surgeon to fold the kidney capsule on either side of the incision so as to make a pad through which to pass the suture in order that there is no tearing or mutilation of the kidney parenchyma. One stitch is usually sufficient to make the fixation. The kidney is placed in position and the wound is closed in the ordinary way. The perinephric fat or fascia of Gerota is now brought up over the kidney to act as a temporary hammock during the patient's convalescence. The patient is placed in bed with the foot of the bed elevated about 6 inches and kept there for three weeks to allow for a better anastomosis between the fascia and the kidney itself. The purpose of the operation is to place the kidney in position so that there is a straight line between the kidney pelvis and the bladder. Incision of the kidney parenchyma has led to no appreciable difference in function.

Infiltrating Carcinoma of Bladder.—Colston and Leadbetter have made a study of ninety-eight cases of extensive infiltrating tumors of the bladder from both the clinical and the pathologic points of view. Of the ninety-eight cases, fifty-

seven showed metastasis (56.1 per cent). Ten more cases had extended through the wall of the bladder without producing metastasis. The demonstration of early metastasis is difficult, but before any radical operation is undertaken roentgenography of at least some of the long bones, abdomen and chest should be proved negative. In all cases in which extensive resection or cystectomy is proposed the peritoneal cavity should be opened, by which procedure a satisfactory examination of the liver, of the glands along the great vessels and of the regional lymph glands can be carried out to exclude metastatic deposits. If metastatic deposits are demonstrable, radical methods are contraindicated and complete cystectomy should be reserved for those cases of infiltrating carcinoma in which other methods have failed, and only when the patient is in sufficiently good condition to withstand these rather formidable procedures.

Medical Annals of District of Columbia, Washington

5: 353-378 (Dec.) 1936

Diseases of Major Duodenal Papilla in Man. V. J. Dardinski, Washington.—p. 353.
Postoperative Pneumonia: Cause, Prevention and Treatment. H. F. Dowling, Washington.—p. 359.
Analysis of Health Survey of 1,193 School Children in the District of Columbia. H. A. Monat, R. A. Bier and E. Lewis, Washington. —p. 362.
Successful Treatment of Massive Air Embolism: Report of Case. O. H. Fulcher, Welch, W. Va.—p. 365.
Medicine in Brazil. W. Caldas Pires, Rio de Janeiro, Brazil, South America.—p. 367.

Medical Bull. of Veterans' Adm., Washington, D. C.

13: 201-296 (Jan.) 1937

The Army Medical Library: Its Resources and How They May Be Utilized. E. E. Hume.—p. 201.
Treatment of Occlusive Peripheral Vascular Disease by Suction Pressure. S. K. Livingston.—p. 205.
Elliott Heat Treatment in Chronic Inflammatory Diseases of Body Cavities and Orifices. L. E. Nolan and Helen K. Dexter.—p. 209.
Use of Benzedrine Sulfate in Catatonic Stupors: Case Reports. C. L. Carlisle and C. H. Hecker.—p. 224.
*Follow-Up Study of Thirty-Five Cases of Paralysis Caused by Adulterated Jamaica Ginger Extract. M. L. Weber.—p. 228.
Fungal Infections of Lung. E. J. Kehoe.—p. 243.
Treatment of Forty-Three Cases of Lobar Pneumonia. H. Mella.—p. 247.
Typing of Pneumococci. H. Reiss.—p. 251.
Blood Count in Pneumonia. Mabel M. Blomberg.—p. 253.
Allergic Etiology in Obscure Gastro-Intestinal Conditions. S. G. Mollica. —p. 257.
Hazard of Travel in Advanced or Terminal Tuberculosis. C. A. Anderson.—p. 261.
Method for Purifying Potassium Iodide. J. Meininger.—p. 263.

Jamaica Ginger Extract Paralysis.—Weber bases his study on thirty-five cases of ex-service men from 28 to 54 years of age at the time of the onset of the paralysis, early in 1930, as the result of drinking adulterated jamaica ginger. Twenty-two of the total number were personally examined by the author during June and July 1936; the remaining thirteen were examined by other physicians during the last two years. In his opinion the orthopedic and neurologic residuals, as seen from the material studied, are due solely to the original paralysis, even though four of the patients are known to have systemic syphilis and several others have continued to consume alcoholic beverages. The absence of cranial nerve involvement and the practical absence of mental manifestations preclude the diagnosis of either neurosyphilis or an alcoholic polyneuritis. The early (1930) prognosticated restoration of motor power in the paralyzed limbs has not materialized in a considerable number of cases. The residuals found were contractures, equinovarus, bilateral foot drop, wrist drop, steppage gait, atrophy of legs, atrophy of hands, exaggerated knee jerks and ankle, knee and patellar clonus. Four patients were unable to stand or walk. The greater disability of the legs, compared with the hands, is accounted for by the fact that the neurons of the legs are longer, requiring more time for their regeneration. The pathology involved appears to be of a combined lower and upper motor neuron degeneration: a neuronitis of the peripheral motor nerves and anterior horn cells, in addition to the lateral motor columns of the spinal cord itself. The prognosis for improvement, barring orthopedic and neurosurgical intervention, appears to be very grave. That the age of the patient had any influence on the outcome of the disease was not observed. As nearly all the peripheral nerves (with the exception of some of the cranials) carry both motor and sensory fibers, it is curious that so little of sensation was impaired in even the most severe cases of the series. It is also curious that the toxin should strike the lower and upper motor neurons at the same time, phylogenically old and new parts of the motor system.

Michigan State Medical Society Journal, Lansing

35: 769-836 (Dec.) 1936

Placental Extract (Immune Globulin Human) with Especial Reference to Its Use in Prevention and Modification of Measles. R. C. Eley, Boston.—p. 769.
Subturbinal Ethmoidectomy in Treatment of Uveitis. J. M. Robb, Detroit.—p. 772.
Currents and Countercurrents in Obstetrics and Gynecology. H. C. Mack, Detroit.—p. 775.
Simple Plan for Treatment of Diabetes in General Practice. F. H. Lashmet, Petoskey.—p. 779.
Treatment of Infantile Paralysis. A. D. La Ferté, Detroit.—p. 782.
Why a Medical Library? A. Malloch, New York.—p. 785.
Medical Libraries. W. T. Dempster, Ann Arbor.—p. 791.

New England Journal of Medicine, Boston

215: 1099-1146 (Dec. 10) 1936

Treatment of Elephantiasis of Legs: Preliminary Report. J. Homans, Boston.—p. 1099.
Repair of Contractures Resulting from Burns. V. H. Kazanjian, Boston. —p. 1104.
Retropharyngeal Abscess. L. Richards, Boston.—p. 1120.

215: 1147-1198 (Dec. 17) 1936

Harvard and Nutrition. G. R. Minot, Boston.—p. 1147.
Extracellular Fluid and Its Maintenance. J. L. Gamble, Boston.— p. 1150.
*Protein Deficiency. C. M. Jones, Boston.—p. 1152.
Mechanism of Hemoglobin Deficiency C. W. Heath, Boston.—p. 1155.
Relationship of Defective Nutrition to Changes in Gastro-Intestinal Tract. W. B. Castle, Boston.—p. 1158.
Vitamin C and Formation of Intercellular Material. S. B. Wolbach, Boston.—p. 1158.
Progress in Early Recognition of Vitamin Deficiency States. K. D. Blackfan, Boston.—p. 1159.
Relation of Avitaminosis to Oral Pathology. P. R. Howe, Belmont, Mass.—p. 1163.
Nerve Disorders Arising from Defective Nutrition. M. B. Strauss, Boston.—p. 1164.
Protamine Insulin and Its Advantages. E. P. Joslin, Boston.—p. 1166.
Urinary Fistulas Opening into Vagina. F. A. Pemberton, Boston; G. van S. Smith, Brookline, Mass., and S. C. Graves, Boston.— p. 1170.
Molded Plaster Right Angle Elbow Splints. P. R. Withington, Milton, Mass.—p. 1174.

215: 1199-1260 (Dec. 24) 1936

Serologic and Allergic Reactions with Simple Chemical Compounds. K. Landsteiner, New York.—p. 1199.
Trend of Prevention, Therapy and Epidemiology of Dysentery Since Discovery of Its Causative Organism. K. Shiga, Tokyo, Japan. —p. 1203.
Clinical and Immunologic Observations in Cases of Pneumococcus Type V Pneumonia Treated with Specific Antibody. M. Finland, Boston, and R. C. Tilghman, Baltimore.—p. 1211.
Aneurysm of Intestinal Branch of Superior Mesenteric Artery. A. R. Kimpton, Boston, and S. C. Dalrymple, Newton Lower Falls, Mass. —p. 1221.
Lymphatic Metastasis in Case of Rectal Adenocarcinoma Simulating Clinically Benign Tumor. W. M. Shedden, Boston.—p. 1222.
More Rational Methods in Prevention and Control of Eclampsia. J. O. Arnold, Philadelphia.—p. 1226.

Protein Deficiency.—Jones concludes that acute or chronic protein deficiency has as its causes (1) an insufficient intake of protein, (2) failure of absorption and (3) an increased loss of protein from the body or, possibly, increased destruction or failure of regeneration of protein. Treatment consists in providing an adequate protein intake whenever possible, in the specific treatment of any other deficiencies that may at the same time interfere with the proper absorption of protein, in appropriate surgery with proper precautions in instances in which inadequate intake or insufficient absorption is due to a lesion of the gastro-intestinal tract, or in the more chronic cases in the use of transfusions and diuretics in order at least temporarily to alter plasma protein values. In all instances it is expedient to limit the intake of fluid and sodium chloride.

New York State Journal of Medicine, New York

36: 1927-2036 (Dec. 15) 1936

Fatigue and Noise in Industry. F. Kennedy, New York.—p. 1927.
Arteriosclerosis and Hypertension in Diabetes Mellitus. J. Schwartz, Brooklyn.—p. 1934.
Current Trends in Medical Education. W. C. Rappleye, New York. —p. 1939.
Late Extra-Uterine Pregnancy. H. H. Ware Jr., Richmond, Va. —p. 1943.
Treatment of General Paralysis by Ultra High Frequency Heating. L. E. Hinsie and J. R. Blalock, New York.—p. 1951.
Present Status of Surgery of Sympathetic Nervous System. W. J. M. Scott, Rochester.—p. 1955.
Entrance of Iodized Oil into Circulatory System During Uterography. G. Weitzner, New York.—p. 1961.
Sensitivity to External Irritants in Industry. L. Schwartz, New York. —p. 1969.
Between Mental Health and Mental Disease. B. Liber, New York. —p. 1978.

Philippine Islands Med. Association Journal, Manila

16: 663-730 (Nov.) 1936

Epidemics of Gastro-Intestinal and Respiratory Diseases in Young Children of the City of Manila in 1936. R. G. Padua, Manila.—p. 665.
Reminiscences of Tenth International Congress on History of Medicine. S. de los Angeles, Manila.—p. 683.
Medicine and Men: Discussion of Compulsory Sickness Insurance. F. E. Sondern, New York.—p. 689.
Treatment of Placenta Praevia. G. Rustia, Manila.—p. 707.

Public Health Reports, Washington, D. C.

51: 1707-1732 (Dec 11) 1936

Duration and Cost of Federal Compensation Cases with Disease as Complicating Factor. W. M. Gafafer.—p. 1707.
*Ornithodoros Turicata: Possible Vector of Relapsing Fever in Southwestern Kansas: Preliminary Report. G. E. Davis.—p. 1719.

Ornithodoros Turicata: Possible Vector of Relapsing Fever.—In late August and early September 1936 Davis and two assistants recovered approximately 2,000 specimens of Ornithodoros turicata in Clarke County, heretofore not known to occur in Kansas. The various stages of the tick were found in rodent burrows, in holes in sand and attached to cottontail rabbits, spermophiles, prairie dogs, prairie dog owls and terrapins. From a single sand hole which contained eleven terrapins (Terrapene ornata) 1,197 ticks were removed. Three strains of spirochetes were recovered from ticks collected from a prairie dog burrow, a sand hole and a cottontail rabbit burrow. The prairie dog burrow was located on a ranch at which a case of relapsing fever had occurred. It seems reasonable to believe that Ornithodoros turicata may be implicated in the transmission of relapsing fever in this area.

51: 1733-1782 (Dec. 18) 1936

*History and Frequency of Diphtheria Immunizations and Cases in 9,000 Families: Based on Nation-Wide Periodic Canvasses, 1928-1931. S. D. Collins.—p. 1736.

51: 1783-1816 (Dec. 25) 1936

Organization for Promoting Mental Hospital Services in the United States and Canada. W. L. Treadway.—p. 1783.

52: 1-30 (Jan. 1) 1937

Disabling Illness Among Industrial Employees in 1935 as Compared with Earlier Years. D. K. Brundage.—p. 1.
Toxicity of Fruit Sprays: Study of Lead Spray Residues in Iowa-Grown Fruit, with Reference to Manifestations in Consumers. R. H. Heeren and Helen B. Funk.—p. 8.
Six Years' Intensive Observation on Seasonal Prevalence of Tick Population in Western Montana: Preliminary Summary. C. B. Philip. —p. 16.

Diphtheria Immunizations and Cases.—Collins conveys the information on the history of artificial diphtheria immunizations obtained on 8,758 white families in 130 localities in eighteen states. The group makes a composite cross-section of the population of the United States. Considering the whole group, 43 per cent of children 9 years of age gave a history of an artificial diphtheria immunization; above this age the percentage declined until at from 20 to 24 years only 5 per cent gave such a history. About 7 per cent gave a history of an attack of diphtheria at this age period. Boys and girls show about the same percentages with a history of diphtheria immunization. Boys less than 10 years of age gave more histories of attacks than girls. In the Northeast and the South the percentages of persons with a history of diphtheria immunization were somewhat higher than in the North Central and Western regions. The South was also high in histories of attacks, but the Northeast was low. Histories of diphtheria immunization were as frequent in rural as in urban places, but histories of diphtheria attacks were most frequent in large cities. The frequency of diphtheria immunizations of children of the preschool ages increases regularly with family income; in the school ages the frequency of immunizations does not show any consistent relation to income. The peak of diphtheria case incidence occurs at a younger age in the South than in the North. The peak of diphtheria mortality in the registration states occurs at 2 years of age. The maximal diphtheria case fatality occurs among infants less than 1 year of age.

Review of Gastroenterology, New York

3: 291-374 (Dec.) 1936

Hiatus Hernia. I. W. Held and A. A. Goldbloom, New York.—p. 291.
Is Gastritis a Common Disease? S. Morrison and M. Feldman, Baltimore.—p. 301.
Treatment of Gastric and Duodenal Ulcer. E. Rosenthal, Budapest, Hungary.—p. 309.
*Insulin Therapy for Duodenal and Peptic Ulcer. P. Sperber, Providence, R. I.—p. 320.
The Autobiography of a Stomach as Related to H. C. Rutherford-Durling, by "Ventriculus."—p. 327.
Neocinchophen Hepatitis with Recovery: Case. J. C. Doane, Philadelphia.—p. 333.
Water Soluble Form of Alpha Naphthol and Its Inhibitive Action on Intestinal Flora of Human Subject. H. C. Carel, Santa Monica, Calif.—p. 334.

Insulin Therapy for Peptic Ulcer.—Sperber employed insulin in the treatment of twenty patients with duodenal or peptic ulcers who received no relief from a dietary regimen. Early cases were relieved of all symptoms and, while observed, showed no recurrences. They were classified as clinically cured, although roentgen examinations still showed a deformity of the duodenal cap. Recurrent cases were greatly improved. Complicated cases showed marked improvement in symptoms reported. One patient was discharged as clinically cured and has been followed for twenty months with no recurrence except a recent loss of appetite. Insulin either completely relieves or else causes a vast improvement in the symptoms. It is difficult to explain the persistence of positive x-ray signs in clinically cured patients who have had no recurrences of symptoms. One patient with gastric ulcer (malignant) reported relief from pain and increased appetite. Pyloric stenosis nullified the insulin beneficial effects. In the older group of complicated ulcers the patients were in many instances saved from major surgical procedures and restored to a useful existence. Insulin therefore offers a medical solution to the treatment of apparently hopeless cases that have been marked for surgery.

Southwestern Medicine, Phoenix, Ariz.

20: 447-484 (Dec.) 1936

Trends in Care of the Indigent Sick. R. O. Brown, Santa Fe, N. M. —p. 447.
Trends in Care of the Indigent Sick by Public Agencies. R. L. Cleere, Denver.—p. 449.
Dermatitis: Atopic and Contact (Eczema). L. M. Smith, El Paso, Texas.—p. 451.
Management of Sinus Disease. F. W. Standefer, Lubbock, Texas. —p. 453.
Interrelationship of Sinus Infection to General Disease. Rea E. Ashley, San Francisco.—p. 456.
Fifteen Years with Trachoma Among the Indians. P. G. Eilers, Washington, D. C.—p. 457.
Arizona Medical Industrial Committee. D. F. Harbridge, Phoenix, Ariz.—p. 460.
Report of Activities of the Social Security Committee. J. D. Hamer, Phoenix, Ariz.—p. 461.
*Etiology and Treatment of Food Allergy. A. W. Oelgoetz, P. A. Oelgoetz and J. Wittekind, Columbus, Ohio.—p. 463.
Injection Treatment of Hernia: Suggestions Gained from Treating Myself and 100 Others. G. S. Chapin, Hollywood, Calif.—p. 465.

Etiology and Treatment of Food Allergy.—The Oelgoetzes and Wittekind advise that many chronic invalids complain of a host of gastro-intestinal symptoms but on examination show no abnormal physical signs. Some of these have true neuroses, but the greater number are sufferers from food allergy secondary to pancreatic hypofunction. Because a gastro-intestinal patient's reactions to foods are so confused by misinformation, biases, fads, prejudices, food likes and dislikes, and, in many cases, true food allergy, the history is more often misleading than informative. That part of the external pancreatic secretion produced when food is in the stomach and intestine (Boldyreff) combines with the food and serves a local digestive function, while that secreted when no food is in the stomach is absorbed into the blood stream to act as true buffers,

splitting whole serum proteins that are toxic and cannot be used as food to nontoxic split products that can be used. When the serum enzymes are in normal concentration, whole proteins cannot reach the cells in an unsplit state. As whole proteins are regular constituents of normal blood, it is the serum enzymes that prevent all of us from being food allergic all the time. In short, food allergy results from too much food, not too much for nutritional requirements but more food than can be hydrolyzed by the available pancreatic enzymes. Food allergy then is not a disease entity or a specific sensitization but a variation of a normal physiologic process. Pancreatic hypofunction may be secondary to a primary disease, syphilis or gallbladder disease for example, but more often no primary disease can be demonstrated. The tensions, stresses and strains of modern life with resultant nervous fatigue produce in the low threshold type of individual, first, overstimulation of the vagus (vagotonia) with oversecretion of the pancreas and, later, fatigue with hypofunction. Extreme fatigue often results in complete pancreatic achylia. Oversecretion of the pancreas produces mild hypoglycemia, while undersecretion permits serum proteins to reach the individual cells in an unsplit state not usable as food but producing the toxic effects known as allergy. Physiologic rest together with underfeeding to meet the lessened pancreatic secretion will quickly remedy many cases. If the reduced intake of food is sufficient for nutritional requirements, no other treatment is necessary. Sedatives help during critical periods. However, since the cause of the symptoms is not only the nervous system but the resulting pancreatic hypofunction, the most effective treatment is the administration of an extract of whole pancreas—preformed enzymes—to help out the inadequate gland. Fifteen grains (1 Gm.) of an active extract after each meal assures a sufficient concentration of serum enzymes to split all the food taken.

Tennessee State Medical Assn. Journal, Nashville

29: 457-496 (Dec.) 1936

Pyloric Stenosis in Infants, with a Few Modifications in Operative Technic: Report Based on Series of Sixty Cases. J. W. Bodley, Memphis.—p. 457.
Important Points in Prostatic Surgery of Interest to the General Practitioner. G. M. Roberts, Chattanooga.—p. 463.
Kidney Lesions with Abdominal Symptoms. I. G. Duncan, Memphis.—p. 469.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

44: 675-728 (Dec.) 1936

Interrelationships Between Thyroid and Anterior Pituitary. J. B. Collip, Montreal.—p. 675.
*New Method of Gradual Dilation of Benign Strictures of the Esophagus. C. L. Hoag, San Francisco.—p. 679.
Postoperative Pulmonary Atelectasis. W. J. Carson, Milwaukee.—p. 683.
Safety Factors in Surgery of Colon. F. M. Findlay, Santa Barbara, Calif.—p. 688.
Partial Excision of Pyloric Sphincter Muscle. G. W. Nagel, San Francisco.—p. 694.
Fibroids and Ovarian Cysts Complicating Pregnancy. L. J. Tiber and S. Turkel, Los Angeles.—p. 696.

Dilation of Benign Strictures of Esophagus.—Hoag suggests a method for use in the dilation of esophageal strictures. It must be used with care and judgment, since injury or perforation of the inflamed and friable esophagus is always a real danger. The smallest Levine duodenal tube, 12 F., is used. Through it is threaded a piano wire (or a tonsil wire) the tip of which has been looped and inserted into a hole burned into the blunt end of the tube. The wire and the tube together are then grasped with a hemostat to prevent slipping. The tube with its stylet is introduced through the mouth into the esophagus. As the tube is passed down the esophagus the stricture is located. If it does not pass the stricture by gentle pressure, 4 or 5 cc. of liquid petrolatum is injected into the tube with a syringe so that it will emerge at the point of the lesion. Again the tube is turned slowly, pressure with the tip being exerted in various directions. Frequently the tube will slide through the stricture into the stomach, allowing the introduction of food and maintenance of a passageway for future treatment. The use of a series of Levine tubes of increasing size acts the same way in the esophagus as a rubber tube in any other sinus and produces a gradual and more permanent dilatation of these strictures as well as providing a means of feeding the patient during the process. It has proved to be a successful method of treating these strictures.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

17: 431-486 (Dec.) 1936

Studies on Neurotropic Rift Valley Fever Virus: Susceptibility of Sheep and Monkeys. G. M. Findlay, R. D. Mackenzie and Ruby O. Stern.—p. 431.
Id.: "Spontaneous" Encephalomyelitis in Mice. G. M. Findlay and R. D. Mackenzie.—p. 441.
Typhus Group of Diseases in Malaya: Part VII. Relation of Rural Typhus to Tsutsugamushi Disease, with Especial Reference to Cross-Immunity Tests. R. Lewthwaite and S. R. Savoor.—p. 448.
Id.: Part VIII. Relation of Tsutsugamushi Disease (Including Rural Typhus) to Urban Typhus; Part IX. Relation of Tsutsugamushi Disease (Including Rural Typhus) and Urban Typhus to Rocky Mountain Spotted Fever (with Especial Reference to Cross-Immunity Tests). R. Lewthwaite and S. R. Savoor.—p. 461.
Necessity of Living Cells for Cultivation of Psittacosis Virus. F. O. MacCallum.—p. 472.
Nutrient Mixture Suitable for Growth of Staphylococcus Aureus. P. Fildes, G. M. Richardson, B. C. J. G. Knight and G. P. Gladstone.—p. 481.

British Medical Journal, London

2: 1067-1124 (Nov. 28) 1936

Prognosis and Therapeutic Principle. J. A. Ryle.—p. 1067.
Some Methods of Analgesia During Labor. Katharine Lloyd-Williams.—p. 1072.
Prognosis of Carcinoma of Cervix. F. H. Finlaison.—p. 1075.
Active Immunization Against Diphtheria: Relative Values of Two Methods as Shown by Subsequent Schick Testing. H. C. M. Williams, J. D. Dear and W. Stewart.—p. 1078.
Cysts of the Mesentery. W. A. Jackman and E. A. Mayston.—p. 1079.
*Milk Allergy in Elementary School Children: Preliminary Report. D. A. Williams.—p. 1081.

Milk Allergy in School Children.—Williams inquired into the family histories of 150 elementary school children who had refused milk at school. Of these, 124 appeared to be allergic to milk. They all had symptoms after milk, or a very definite dislike of it, and all except five gave a personal or family history of allergy. Twelve disliked the school milk only because of its taste (it was pasteurized), but it is significant that five of them came from allergic stock. Fifteen children refused the school milk for reasons unconnected with health. It did not disagree with them and apparently they were normal children; only two had allergic histories. Forty normal children taking milk readily without ill effects were examined as a control; only four gave a personal or family history of allergy. While the popular movement to encourage the widespread consumption of milk has much to commend it, the fact that not every one can take it with impunity should be remembered. The refusal or disinclination of many children to take milk at school should be given due consideration. Their attitude is probably protective in nature to prevent them from suffering allergic reactions and possibly also to give them time to develop a gradual immunity to milk. Desensitization to milk not infrequently occurs as a result of its omission from the diet over a lengthened period, and the degree of tolerance often varies with the interval. Thus milk should not be forced on these children but rather withheld.

Edinburgh Medical Journal

43: 717-804 (Dec.) 1936

Clinical Recollections and Reflections: VIII. Alcoholism and Psychiatry. D. K. Henderson.—p. 717.
The Pupil After Cervicothoracic Sympathetic Ganglionectomy: Photographic Observations in Man. J. R. Mutch.—p. 743.
Corynebacterium Diphtheriae in Edinburgh: Incidence of Types Among Cases and Carriers from 1932 to 1936. May H. Christison, Helen A. Wright, Barbara J. Shearer and R. C. M. Pearson.—p. 747.
The Philosophy of a Doctor. W. T. Ritchie.—p. 760.

Journal of Anatomy, London

70: 447-594 (July) 1936

Thalamic Connections of Temporal Lobe of the Brain in the Monkey. W. E. Le Gros Clark.—p. 447.
Presence of Double Cones and Oil Droplets in Retina of Marsupials: Preliminary Note. K. O'Day.—p. 465.
Intraneural Plexus and Its Significance. J. E. A. O'Connell.—p. 468.
Wound Healing in Vitro. F. H. Bentley.—p. 498.
Variation in Lymphocyte Production. J. M. Yoffey.—p. 507.
The Head Problem in Chordates. D. de Lange.—p. 515.
Surgical Anatomy of Neck in Relation to Septic Lesions: Investigation of Cervical Connective Tissue. D. Barlow.—p. 548.
Congenital Urogenital Anomalies in Rats, Including Unilateral Renal Agenesis. A. M. Hain and E. M. Robertson.—p. 566.

Journal of Pathology and Bacteriology, Edinburgh

43: 441-608 (Nov.) 1936

Titration of Vaccinia Virus on Chorio-Allantoic Membrane of Chick Embryo and Its Application to Immunologic Studies of Neurovaccinia. E. V. Keogh.—p. 441.
Biology, Pathogenesis and Classification of Streptobacillus Moniliformis. C. E. van Rooyen.—p. 455.
Suprarenal Atrophy Following Denervation: Case with Necropsy. A. M. Snell, R. M. Wilder and R. W. Cragg.—p. 473.
Immunity Following Cure of Experimental Trypanosoma Brucei Infection by Chemotherapeutic Agent. C. H. Browning and R. Gulbransen.—p. 479.
Direct Fermentation of Disaccharides and Variation in Sugar Utilization by Streptococcus Thermophilus. H. D. Wright.—p. 487.
Production of Reversed Anaphylaxis in Man. C. E. Kellett.—p. 503.
Malignant Hemangio-Endothelioma of the Heart: Report of Case. T. F. Hewer and R. P. Kemp.—p. 511.
*Chemotherapy of Experimental Typhoid Carrier State in Immature Rabbit. M. Coplans.—p. 517.
Bactericidal Action of Serum Against Meningococcus, Gonococcus and Micrococcus Catarrhalis. J. Gordon and L. Hoyle.—p. 537.
Further Observations on General Bactericidal Action of Normal Serum. J. Gordon and L. Hoyle.—p. 543.
Effect of Meat Extract and Other Substances on Pigment Production. N. E. Goldsworthy and J. L. Still.—p. 555.
Significance of Changes in Diameter of Erythrocytes in Familial Acholuric Jaundice. J. C. Hawksley.—p. 565.
Benign Calcified Epithelioma of Skin. F. H. Côté.—p. 575.

Chemotherapy of Experimental Typhoid Carrier State.—Coplans inoculated 104 immature rabbits with a single intravenous injection of a prepared strain of Bacillus typhosus. These rabbits proved without exception to be "carriers" of the specific organism, showing infection of the hepatic system up to the thirty-seventh week following inoculation. The organism was recovered from the bone marrow and from the feces up to the twenty-seventh week, from the former in 93.9 per cent and from the latter in 84 per cent. The urinary system was found to be infected up to the sixteenth week following inoculation, the urine proving positive in 79.1 per cent. The organism was recovered from the blood in 48.3 per cent of all animals examined up to the eighth week following inoculation, the latest positive result being on the forty-sixth day. Oral administration of methenamine-sodium acetate was found preferable to methenamine. Within fifteen days of the commencement of daily treatment the organisms disappeared entirely from the infected animals. When treatment was commenced ten days prior to infection, the organisms could not be found after seven days. Sodium acetate administered orally daily for 100 days rendered four of thirteen animals free from infection. Sodium mandelate administered for a similar period, while freeing the urinary system from organisms, failed to influence the infection of the gallbladder and bile, which remained positive in eight cases. Normal animals exposed to infection by contact with typhoid carriers for sixty-two days failed to show infection. The offspring of parents both of which were carriers were not found to be infected at birth.

Lancet, London

2: 1253-1312 (Nov. 28) 1936

From Consumption to Tuberculosis. S. R. Gloyne.—p. 1253.
Complement Fixation Reaction in Influenza. W. Smith.—p. 1256.
Inhibitory Effect of Testosterone Propionate on Experimental Prostatic Enlargement. S. Zuckerman.—p. 1259.
Complement Titer in Acute Nephritis, with Especial Reference to Causation by Reversed Anaphylaxis. C. E. Kellett.—p. 1262.
*Intravenous Injections of Charcoal in Treatment of Acute Febrile Disease. E. Davis.—p. 1266.
Palpebritis from Eyelid "Shading." H. C. Semon.—p. 1267.
Amaurosis in Pernicious Anemia. C. R. Box.—p. 1269.

Intravenous Injections of Charcoal.—Davis tested the effects of intravenous charcoal in healthy subjects, in patients with skin diseases and in 123 patients with fever of various origin. A 2 per cent suspension of charcoal injected intravenously into afebrile subjects often caused a rise of temperature, pulse and respiration, frequently associated with chills and rigors. To the febrile patients the charcoal was given in 2 per cent suspension in gum-saline solution, in saline solution alone or in distilled water, but the results did not vary with the vehicle, and wood charcoal did not differ in action from animal charcoal. In half the febrile cases the injections were followed by a rise in temperature, respiration and pulse within a few hours. Often the temperature reached was the highest since the beginning of the disease, and not infrequently it was the maximum for the whole illness. This rise was often followed by an abrupt fall in temperature to normal, usually temporary; the rise and fall were over in eight hours. In the other half of the cases the temperature, respiration and pulse were not significantly altered. Subjective reactions were uncommon. For the trial of charcoal in febrile diseases, only those patients were selected who had been in the hospital at least twenty-four hours and who were not improving. The 123 patients received 269 injections of charcoal—usually from 4 to 5 cc. of a 2 per cent suspension. In most cases it was given in addition to ordinary therapy. Injections of gradually increasing doses were given at intervals of a day or longer for as long as the clinical condition and temperature, respiration and pulse did not show marked improvement. The results were compared with those obtained in similar control patients with the same disease who were in the hospital at the same time and whose treatment was the same except that they received no charcoal. No significant difference was found between these results; the death rates were approximately the same and so was the manner of recovery.

Practitioner, London

137: 789-932 (Dec.) 1936

Treatment of Uremia. D. M. Lyon.—p. 789.
Infections of Urinary Tract. R. M. Handfield-Jones.—p. 802.
Diagnosis and Treatment of Urinary Lithiasis. J. S. Joly.—p. 817.
Disorders and Diseases of Urinary Bladder. J. B. MacAlpine.—p. 832.
Diseases of the Prostate. J. Everidge.—p. 844.
Diseases of the Male External Genitalia (Other Than Venereal). K. M. Walker.—p. 864.
*Surgery of Urinary Tract in Childhood. T. T. Higgins.—p. 873.
Estimation of Renal Function. H. Gainsborough.—p. 887.
Clinical Examination of Urine. C. Dukes.—p. 900.
Lumbar Puncture in General Practice. W. G. Wyllie.—p. 906.
General Practice: VI. Panel Practice. H. G. Dain.—p. 914.

Surgery of Urinary Tract in Childhood.—Higgins states that the clinical manifestations of disorders of the urinary tract in childhood are general (pain, fever, presence of a tumor) disorders of micturition (frequency, urgency, pain and dribbling) and changes in the urine (odor, cloudiness, presence of blood and pus). Roentgen examination by means of plain roentgenograms, excretion pyelography and retrograde cystography and pyelography supplies valuable information. Preliminary preparation is necessary to get rid of intestinal gas. With the instruments now available it is possible to carry out cystoscopy and even ureteral catheterization in children from the age of approximately 18 months. Pyuria becomes a surgical problem when it persists in spite of treatment for a period longer than six to eight weeks or when it is recurrent in type. Developmental anomalies may be many and various. In the main their effect is to determine obstruction at some point or points in the urinary channel with resulting dilatation and stagnation of the normal flow of urine. Such stagnation predisposes to infection and, once infection has occurred, inflammatory swelling further aggravates the obstruction. A vicious circle is formed and recovery retarded. Apart from systemic disease, e. g., hemophilia, nephritis, injury or the transient smokiness which may mark the acute onset of urinary tract infections, hematuria in childhood may be the prominent symptom in meatal ulcer, calculus and tuberculosis. On rare occasions it may result from ulceration of the bladder, nevus growths, essential hematuria, congenital cystic kidneys and hydronephrosis. In obstinate cases of ulcer with a small meatus, meatotomy may be necessary. Removal of the calculus alone is not enough, the underlying cause, hydronephrosis, must be removed if possible to prevent recurrence. Provided the child's general health indicates that the tuberculosis in the urinary tract is the dominant lesion, and provided one kidney is chiefly involved, nephroureterectomy gives excellent results. In favorable cases of hydronephrosis, division of an abnormal artery and/or freeing of the ureter from adhesions have given gratifying results.

Tubercle, London

18: 97-144 (Dec.) 1936

Tuberculosis in Hospital Nurses. J. Heimbeck.—p. 97.
Oat Cell Carcinoma of Lung Occurring in Asbestosis: Case. S. R. Gloyne.—p. 100.
Intradermal Tuberculin Test in Nurses. P. W. Edwards.—p. 101.
*The Tuberculosis Problem Among Nurses in a Tuberculosis Sanatorium. E. S. Mariette.—p. 103.

Tuberculosis Among Nurses.—Mariette states that tuberculosis is spread by contact with the patient's sputum rather than by contact with the patient himself. Uninfected individuals

who take care of tuberculous patients will in due time become infected. The incidence of infection in student nurses at the end of their senior year varies in hospitals that have a tuberculosis service or an affiliation from at least 56 to almost 100 per cent. Only a small percentage of those who are infected are ever harmed in the least by their infection. According to laboratory experimentation, a mild infection increases the natural resistance to exogenous reinfection when the reinfection occurs not sooner than four to six weeks after the first infection. A tuberculin-positive nurse is less likely to develop serious and fatal tuberculosis as a result of caring for tuberculous patients than is the tuberculin-negative nurse. Eighteen, or 16.5 per cent, of the supervising nurses gave x-ray evidence of the adult type of tuberculosis on the initial roentgenogram and another seven, or 8.3 per cent, subsequently developed active adult tuberculosis. Thirty-six, or 8.9 per cent, of the general duty nurses gave x-ray evidence of the adult type of tuberculosis on the initial roentgenogram and another twenty-five, or 6.2 per cent, subsequently developed x-ray evidence of the adult type of tuberculosis. Sixty-eight, or 6.4 per cent, of the student nurses had x-ray evidence of the adult type of tuberculosis on the initial roentgenogram, and subsequently an additional fifty-three, or 4.9 per cent, developed x-ray evidence of the adult type of tuberculosis. In order to minimize the hazard to nurses, the patient should be taught to cover his mouth with a fresh paper napkin every time he coughs or sneezes and to expectorate into a paper cup that can be burned. Scrub basins should be provided so that the nurse may wash her hands thoroughly at frequent intervals. Each nurse should have a clean gown daily and should be roentgenographed at the beginning of employment or when she enters the hospital as a student and at regular intervals thereafter. Working conditions should be comparable to those in industry, in which the exposure to disease and strain is not as great as it is in the nursing field. A course of instruction should be given all nurses, including lectures and special conferences, so that she may be informed of the nature of the disease and how to protect herself against it, and only students who are tuberculin positive should be admitted to the nurses' training schools or the employment of nurses in a sanatorium limited to those who are tuberculin positive.

Chinese Medical Journal, Peiping

50: 1323-1554 (Oct.) 1936

Anterior Chamber Punctures: Aid in Diagnosis of Glaucoma. P. C. Kronfeld and C. K. Lin.—p. 1323.
Restoration of the Eye Socket with Thiersch Graft: Report of Six Cases. C. K. Lin.—p. 1335.
Retrobulbar Neuritis Among the Chinese: Report of Fifty-Three Cases. C. K. Lin.—p. 1345.
Further Observations on Retrobulbar Neuritis in the Chinese. P. Chen and W. P. Ling.—p. 1373.
*Keratitis Punctata Superficialis and Swimming Pool Conjunctivitis: Discussion on Some Cases in the Chinese. W. P. Ling.—p. 1381.
Contribution to Knowledge of Marginal Corneal Ulcer: Report of Five Cases. P. S. Soudakoff.—p. 1393.

Swimming Pool Conjunctivitis.—Since June 1934 Ling has observed fifty-three typical cases of superficial punctate keratitis conforming to the description given by Ernst Fuchs. For twelve years previously neither the author nor his colleagues encountered any condition of this kind with the exception of one case, which was questionable. The cases under discussion appeared in the eye clinic of the Peiping Union Medical College in rather quick succession within a comparatively short period and many of them were associated with so-called swimming pool conjunctivitis. The incidence was most marked in the latter part of 1934. A certain relationship seemed to exist between superficial punctate keratitis and swimming pool conjunctivitis, although the former could occur independently of the latter. It is possible that the two conditions had one and the same etiology. The simultaneous occurrence of these two conditions does not seem to have been mentioned in the literature. As swimming pool conjunctivitis is probably of genito-urinary origin, it can naturally occur under any circumstances and may be transmitted from one person to another at any time. Accordingly some authors have suggested the name "adult inclusion conjunctivitis" or "inclusion blennorrhea of the adult" instead of swimming pool conjunctivitis, which may be misleading.

Bulletin de l'Académie de Médecine, Paris

116: 424-490 (Dec. 1) 1936

*Endocrine Origin of Prostatic Hypertrophy. B. Cunéo.—p. 434.
Acute Poliomyelitis in Paris During Last Three Years. Tannon and A. Besson.—p. 446.

Endocrine Origin of Prostatic Hypertrophy.—The object of Cunéo's report is to show that the type of hypertrophy usually called prostatic adenoma is of endocrine origin. From a structural standpoint the adenoma has the same constitution as the prostate itself. It is formed essentially by a group of nodules, of which the center is a glandular cavity comparable to the prostatic glandules and the periphery a fibromuscular capsule. These facts led to the opinion that the prostatic adenoma develops not from the prostate properly speaking but from the elements placed in its center near the ureter and above the origin of the verumontanum. The usual age of appearance is between 50 and 60 years and coincides with the period of decline of genital activity. Clinical observations reported by Cunéo, although small in number, led him to the conclusion that treatment with estrogen gives excellent results from the functional standpoint. In patients observed for more than three years, the impression was gained that because of the treatment, separated by periods of rest, the disorder remained stationary if it did not even regress. He believes that the development of the adenoma is the consequence of weakening of the secretion of estrogen. The latter may be combated by administration of estrogen either orally or subcutaneously. The use of estrogen is also recommended especially from a preventive standpoint.

Bulletin Médical, Paris

50: 815-832 (Dec. 5) 1936

*Indications for Hepatic Opotherapy in Asthma. Girbal.—p. 817.

Liver Therapy in Asthma.—Asthma is a syndrome of toxic infectious origin superimposed on a predisposed ground affected by endocrine disequilibrium. Therefore, according to Girbal, asthma does not exist without hepatic insufficiency, and without hepatic treatment permanent cure of asthma is impossible. He has observed numerous cases confirming this opinion but cites three characteristic ones in the present article. He believes that in all asthmatic patients, if systematic search is made, signs of hepatic insufficiency can be found. Thus in an examination of the urine of 100 asthmatic patients he found traces of sugar in fifty-eight, excess urobilin in forty-eight, traces of albumin in fifty-five and biliary salts in forty-one. Similarly, clinical examination frequently reveals dyspepsia, migraine or other symptoms indicative of functional hepatic insufficiency. Furthermore, the systematic treatment of asthma with oral or hypodermic liver extracts, as well as the specific bacterial product indicated, leads to favorable results. Cholagogues, because of their action on congestion in the liver, are also indicated.

Presse Médicale, Paris

44: 1889-1912 (Nov. 21) 1936

New Researches on Epilepsy of Guinea-Pig Caused by Cutaneous Parasites. P. Pagniez and A. Plichet.—p. 1889.
Polyradiculoneuritis. G. de Morsier and J. Steinmann.—p. 1890.
*Rare Form of Insomnia. R. Lacassie.—p. 1892.
*Postoperative Humoral and Tissue Syndrome. J. Bottin and J. Conradt.—p. 1894.
Changes of Cardiovascular System in Actors. A. M. Vydrine.—p. 1895.

Rare Form of Insomnia.—Lacassie investigated the factors involved in postoperative insomnia and found that the most important are vomiting and the results of morphine injections. Morphine injected for pain unquestionably assists in the development of nausea and vomiting. Furthermore, experience has shown that a number of injections of morphine are followed by insomnia, in spite of the suppression of symptoms that necessitate them. The author believes that postoperative insomnia can be classified into several types; namely, early insomnia, which develops in the hospital and is more postoperative than postanesthetic and has probably a complicated mechanism, and late insomnia, the mechanism of which appears to be more postanesthetic than postoperative. A partial late insomnia also apparently exists, characterized by more or less poor sleeping but which is usually readily amenable to hypnotics.

Postoperative Humoral and Tissue Syndrome.—According to Bottin and Conradt, three factors must be considered in the study of the tissue changes resulting from surgical

operation: the disorder for which the operation is being performed, the state of the patient at the moment of operation and the surgical act itself. The best method of studying the humoral and tissue modifications following operations seems to be experimentation on absolutely well animals by close simulation of the human surgical technic. In this manner the authors studied the effect of starvation, anesthesia and the operation itself on some of the tissues. The starvation affects dogs only slightly and is characterized by some reduction in the quantity of water in the blood with a minimal reduction in the mineral elements. Diuresis is rapidly reduced and the urinary minerals excreted fall to a small quantity. The effects of anesthesia on the blood and urine are varied, depending on the type and duration of narcosis employed. In general there is a definite restriction in the amounts of urinary chlorides. The effects of the surgical act itself are more marked. The blood volume is reduced about 10 per cent in cases in which operative hemorrhage plays no part. The globulin-plasma ratio is increased because of loss of plasma. Globulin is generally also increased. Nonprotein nitrogen, urea and residual nitrogen are increased. The alkali reserve is slightly lowered and there is a definite drop in the sodium, potassium and calcium of the blood. In the urine there is a drop in total quantity and in mineral elements, especially chlorides. From the practical standpoint a study of the tissue syndrome of the postoperative period does not allow the formulation of adequate therapeutic measures for the changes observed. It is, however, necessary to restore the water balance of all those operated on in order to reestablish a nearly normal state. It seems wise also to give sodium, potassium, calcium and chlorides in satisfactory proportions by the subcutaneous method if necessary.

44: 1913-1936 (Nov. 25) 1936

Progress in Study of Anaerobic Organisms Since the War. M. Weinberg.—p. 1913.
*Dangers of Radioactive Substances Introduced into Body. S. Laborde.—p. 1915.

Dangers of Radioactive Substances Introduced into Body.—It is well known that radioactive substances introduced into the general circulation exert interesting therapeutic actions, but the accompanying dangers are not equally well known. The most common substances used, according to Laborde, are radon, mesothorium, radiothorium, thorium X, thoron and rarely the salts of radium. The knowledge of the fixation of radioactive elements and the electivity of their action on certain substances of the body serve to direct attention to the dangers which their presence may cause. Thus, their fixation at the level of the reticulo-endothelial tissues and the bony medulla readily explains their harmful action on all the blood-forming organs and the osseous tissue. The principal harmful effects, therefore, which these substances are likely to produce are osseous necroses, certain tumors of the bone, diseases of the blood-forming system and cutaneous accidents. Among the better known of the accidents of bone necrosis are those resulting from painting watches and clocks with radioactive substances. Similar disorders of the blood system have been reported from the professional use of radioactive substances and from therapeutic uses as well. From his review of this subject the author concludes that the therapeutic doses currently employed are frequently too close to toxic doses. There is no evidence that it is wise in therapeutics with such elements to exceed the dose of radioactive substances obtained from natural radioactive sources existing in some of the spas.

44: 1937-1952 (Nov. 28) 1936

Cardiac Clinic: Inaugural Lecture. C. Laubry.—p. 1937.
*Effects of Bleedings on Blood of Universal Donors. Merklen, L. Israel and A. Apffel.—p. 1941.
Urticarias Cured by Appendectomy. P. Chevallier and M. Colin.—p. 1942.

Effects of Bleedings on Blood of Universal Donors.—Much more attention has been paid to the recipient of a blood transfusion than to the donor. From the standpoint of the frequent donors, however, the results of large transfusions are important to both parties. Merklen and his collaborators examined twenty donors who had given quantities of blood varying between 2 and 15 liters. There were fourteen men and six women, ranging in age from 24 to 59 years. The number of red blood corpuscles was only slightly changed, there being a count of below 4,000,000. The hemoglobin was found to be more variable, being between 60 and 70 per cent in four instances but lower in none. The white cells were normal except in two persons, in whom it was high in one and low in the other. In one patient there was one myelocyte. Nevertheless, ten of these donors showed more or less neutropenia, which was quite marked in three instances. This tendency to agranulocytosis constituted the single important factor uncovered by the examination. While of questionable significance, the authors believe that these facts point to the probability that the regeneration after transfusion is fastest in the erythrocytes, slightly less rapid in the hemoglobin and still slower in the white blood cells.

Schweizerische medizinische Wochenschrift, Basel

67: 1-24 (Jan. 2) 1937. Partial Index

Histologic Diagnosis of Measles. C. Wegelin.—p. 1.
*Pathogenesis of Bronchiectasis. W. Löffler.—p. 2.
Extrapleural Filling in Treatment of Pulmonary Abscess. R. Nissen.—p. 6.
Experiences with Klein's Cancer Reaction. A. Fehr.—p. 8.
Apparatus for Moistening Respiratory Oxygen. F. Rumpf and H. Kühni.—p. 16.

Pathogenesis of Bronchiectasis.—Löffler points out that opinions still differ as to whether bronchiectasis is a congenital or an acquired process. He emphasizes that in tuberculosis roentgenoscopy and in bronchiectasis auscultation is the more reliable diagnostic procedure. He discusses the condition of the sputum in the two disorders, and then bronchography. He presents the arguments in favor of the congenitality of bronchiectasis and groups them under four headings: localization, pathologic anatomy, concurrence of bronchiectasis with other deformities and the familial occurrence of bronchiectasis. The sites of predilection of bronchiectasis are the left lower lobe, the right upper lobe and the paracardial section in the right lower lobe. He emphasizes that not the lobes as such but rather the pertaining parts of the bronchial tree are responsible for the localization of bronchiectasis. The common characteristics of the three bronchial branches are their asymmetry and the fact that deformities are especially frequent in these branches. As to the pathologic anatomy of bronchiectasis, it is not permissible to consider as equivalent true dilatative changes of the bronchial wall, which are microscopically recognizable by the atrophy of the elastic elements, and suppurating, ulcerative changes in the parenchyma: bronchiectasis signifies dilatation; the suppurating destruction of the pulmonary parenchyma with or without involvement of the bronchial wall is an abscess and not a bronchiectasis. In discussing the concurrence of bronchiectasis with other deformities he cites reports from the literature and states that in the bronchiectasis material of his clinic (142 cases) he observed that bronchiectasis concurred with such conditions as status thymicolymphaticus, multiple cartilaginous exostoses, color blindness, heterochromia iridis, hereditary deafmutism, congenital cardiac defect, cystic kidneys and idiocy. The concurrence of bronchiectasis with chronic suppurations of the accessory nasal sinuses and particularly with situs viscerum inversus is another noteworthy factor. Regarding the familial occurrence of bronchiectasis the author says that he observed it in four pairs of cases, three times in siblings and once in cousins. He also cites cases of familial occurrence from the literature. He does not doubt the occurrence of acquired bronchiectasis, but he only wishes to emphasize that it is frequently congenital, even if the anamnesis seems to indicate infectious diseases or colds as the cause. In the individual instance it may be difficult to decide whether a case is congenital or acquired, but a survey of a large material justifies the assumption of congenitality.

Policlinco, Rome

43: 607-658 (Dec. 15) 1936. Surgical Section

Pneumococcic Peritonitis: Case. L. Joss.—p. 607.
Surgery in Diabetes: Influence of Induced Parotid Swelling on Experimental Pancreatic Diabetes. C. Mastrosimone.—p. 622.
Acute Appendicitis in Persons of Advanced Age and in Old Persons: Clinical, Statistic and Anatomopathologic Study. C. Stefanelli.—p. 644.
*Leukocyte Formula in Gastroduodenal Ulcer Before and After Gastric Resection. L. Ugelli.—p. 652.

Leukocyte Formula in Gastroduodenal Ulcer, Before and After Gastric Resection.—Ugelli states that association of lymphocytosis and eosinophilia, which is a common occur-

rence in patients suffering from gastroduodenal ulcer, is not a characteristic blood picture of ulcer but an indication of vagotonic constitution of the patient. Vagotony determines a gastric angiospasm which predisposes to the development of ulcer. The leukocyte formula can be altered in patients suffering from gastroduodenal ulcer complicated by infection or hemorrhage. The last two mentioned complications may determine the production of neutrophilia, which can be controlled by repressing the complicating infection or the causal factor. The author made determinations of the leukocyte formula in seventy-three patients suffering from gastroduodenal ulcer before and late after gastric resection. He found association of lymphocytosis and eosinophilia in 40 per cent of the cases before and late after the operation. Cases complicated by infection or hemorrhage showed neutrophilia, which disappeared after gastric resection.

Sperimentale, Florence

90: 487-595 (Oct.) 1936

Liver and Glutathione: Contents of Glutathione in Blood of Afferent and Efferent Liver Circulation and in Blood of Vena Cava. G. Barbaro-Forleo and F. Cattaneo.—p. 487.
*Parallel Changes of Peripheral and Medullary Blood Immediately and Late After Splenectomy. S. Deleonardi and L. Paolazzi.—p. 512.
Experimental Production of Tumors by Injections of Thorium Dioxide Sol. G. Prussia.—p. 522.
Alterations of Liver Following Injections of Bile. C. Gargano.—p. 540.
Antigenic Capacity of Insulin: Experiments. G. Spaccarelli.—p. 545.
Permeability of Erythrocytes of Normal Persons and Diabetic Patients to Dextrose in Vitro. G. Patrassi and U. Teodori.—p. 555.
Spine, Cranium and Brain in Complete Transposition of Viscera: Case. Flora Spolidoro.—p. 588.

Parallel Blood Changes After Splenectomy.—Deleonardi and Paolazzi studied the behavior of the peripheral and medullary blood immediately and late after splenectomy in dogs. They found that immediately after splenectomy the total number of globules in the peripheral blood, especially those of minimal resistance and the reticulocytes, increase. Erythrocytes and reticulocytes diminish in the medullary blood. Peripheral polyglobulia has a medullary and splenic origin. The liberation of medullary cells to the blood is controlled by splenic nervous reflexes and splenic substances, the lack of which results in lowering of the "medullary threshold" with consequent passage of immature cells (reticulocytes) through the myelohematic barrier. The passage of splenic cells, especially those of minimal resistance, takes place during contraction of the spleen by the maneuvers that precede ligation of the splenic vessels in splenectomy. Late after splenectomy the resistance of the blood cells, in both the peripheral and the medullary blood, increases. In the peripheral blood, cells of maximal resistance appear which do not exist in the blood of normal dogs. In the peripheral and medullary blood the number of reticulocytes and cells of maximal resistance increases and that of erythrocytes diminishes. The authors say that the increased osmotic resistance of erythrocytes that follows splenectomy is due to the lack of hemolysis because of the absence of the spleen. The increase of reticulocytes and the appearance of hyperresistant cells in the circulation is due to the lowering of the "medullary threshold" which results from splenectomy.

Semana Médica, Buenos Aires

43: 1761-1836 (Dec. 24) 1936. Partial Index

*Kaposi Familial Sarcoma: Clinical and Etiologic Study. N. V. Greco.—p. 1761.
Thoracoplasty with Aspiration of Blood During Operation. H. Aguilar and A. A. Veppo.—p. 1768.
Grave Albuminuria in Pulmonary Tuberculosis: Cases. J. B. Ferradás.—p. 1770.
Acute Retention of Urine from Urethral Calculus: Case. E. Castaño, J. Grinberg and S. Wilber.—p. 1800.
Tuberculosis of Female Genital Apparatus: Treatment. A. de Moraes.—p. 1812.
Reinfection and Superinfection of Syphilis: Cases. A. A. Diaz Colodrero, D. Calzetta and H. J. T. Pisetta.—p. 1822.

Kaposi Sarcoma.—Greco reports a case of familial Kaposi sarcoma. In the course of the last twenty years, two brothers died from the disease and at present the third brother and a nephew are suffering from it. There have been no cases of the disease in the women of the family, although they came in contact with the patients as much as the men did. The disease in all cases followed a protracted evolution. The author was able to make an etiologic study from the infectious, parasitic and microbiologic aspects in two of the patients. The disease began with edema of the legs and pain of the extremities and evoluted with late appearance of cutaneous pigmented spots and nodules, which were hard at first and then softened. The liquid obtained by puncture of soft nodules coagulated in a test tube on the first day, but the coagulum was subjected to partial lysis by the third day. On microscopic slides it suffered lysis in twenty-four hours. Mycotic cells were identified in the liquid both by direct observation of the liquid placed in a sodium hydroxide solution and by microscopic examination of fresh and stained preparations of the liquid. Mycotic cells were not found in histologic preparations made with tissues taken for a biopsy of the nodules. Attempts to culture the fungus and to transmit the disease to rabbits failed. According to the author, the fungus found in his cases is the causal agent of the disease. The nature of Kaposi sarcoma as a mycosis explains the slow evolution of the disease. Softening of the nodules is due to mycotic ferments. The author concludes that Kaposi sarcoma is a mycosis and at the same time an infectocontagious disease which can be transmitted by direct and indirect contagion like other common infections. The incubation period of the disease varies fom one to ten years. The disease attacks adults and old persons and more frequently men than women. The ages of the patients reported by the author were 28, 32, 58 and 59 years. The fungus has not been identified but probably belongs to the genus Aspergillus or is a cryptococcus.

Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

54: 433-540 (Nov.) 1936. Partial Index

Roentgenologic Aspects of Disturbances of Small Intestine. F. Kuhlmann.—p. 433.
Limits and Advantages of Roentgenokymography of Heart. H. Ludwig.—p. 469.
*Cardiac Movements in Case of Elevation of Diaphragm in Relation to Gastrocardiac Symptom Complex and Theory of Apical Impulse of Heart. W. Böhme and R. Wawersig.—p. 476.
Physiologic Foundations of Roentgenoscopy. G. C. E. Burger and B. van Dijk.—p. 492.
*Roentgenokymographic Studies on Movements of Healthy and Diseased Renal Pelves and Ureters. Maria Maintz and G. Wüllenweber.—p. 505.
Pathogenesis of Detachment of Epiphysis of Femoral Head. Nadeschda Rendel.—p. 517.

Cardiac Movements in Case of Elevation of Diaphragm.—Böhme and Wawersig investigated whether in addition to the already known positional changes of the heart in case of elevation of the diaphragm, which may produce the so-called gastrocardiac syndrome, there exist still other changes in the movement of the heart as a whole or of some of its parts. They found that in all cases of chiefly left-sided elevation of the diaphragm the following can be demonstrated in addition to the already known topographic changes: 1. Elevated diaphragm in case of relatively slack diaphragm; that is, gastric eventration and diaphragmatic hernia produce a heart action resembling the tachycardia of pneumothorax. 2. A rigidly stretched left side of the diaphragm above a greatly distended stomach or colon is capable of causing from below a considerable compression of the cardiac muscle when it is relaxed during the diastole. 3. A diaphragm that is displaced in such a manner may elevate the heart during every diastole to such an extent that during every systole the heart has to press the diaphragm downward while it rotates around its sagittal axis. The conditions mentioned under points 2 and 3 may be absent, but their existence is a measure of the displacement of the heart by the diaphragm. Both of the latter phenomena represent a reversal of those conditions which correspond to the normal apical impulse according to the theory of Ludwig. Such conditions and particularly the abnormal modes of cardiac movement caused thereby, if they gradually increase in severity, will impose excessive work on the heart and will cause considerable subjective symptoms in affected persons.

Roentgenokymographic Studies on Renal Pelves and Ureters.—Maintz and Wüllenweber show that Stumpf's roentgenokymograph makes possible the exact study of the normal and pathologic movements of the renal pelves and ureters. It reveals the number and amplitude of the contractions and regularity or irregularity of the ureteral waves. In case of

disease, roentgenokymography reveals atony or disturbances in the peristalsis. Roentgenokymography discloses atony of the ureters and of the renal pelvis in some cases in which simple pyelography may simulate normal conditions. Roentgenokymography is valuable also in the control of therapeutic methods in that it can be used for determining the degree of functional improvement that is effected by a therapeutic measure. The progressive recovery of the renal function after an operation for calculus can likewise be observed. Moreover, the roentgenokymogram of the urinary tract discloses whether the disorder is due to defects of the spinal cord (tumor or myelitis) or whether the bladder or a higher part (ureter or renal pelvis) is paralyzed.

Jahrbuch für Kinderheilkunde, Berlin

148: 113-176 (Dec.) 1936

Acute Infectious Diseases in Young Nurslings. H. Zischinsky.—p. 113.
Unification of Statistics on Breast Feeding. G. Fedders.—p. 149.
*Permanent Impairment of Heart in Children After Diphtheria. A. Beer. —p. 152.

Impairment of Heart in Children After Diphtheria.—In order to determine whether permanent cardiac impairment develops after diphtheria and what significance it has, Beer made a follow-up examination of children who had had diphtheria with cardiac complications during 1928-1935. Among forty he discovered seven who had noticeable cardiac disorders, in four of whom they were chiefly of a clinical and anamnestic nature with only slight electrocardiographic changes, while in the other three there existed only electrocardiographic changes. The author gained the impression that the cardiac impairments which appear in the course of diphtheria disappear largely in the course of the following years. He points out that Hecht expressed the optimistic opinion that the cardiac defects caused by diphtheria disappear generally in the course of months. In view of all this, the author concludes that the rôle which some authors have ascribed to diphtheria in the heart diseases of older persons is only a supposition and requires further investigation.

Klinische Wochenschrift, Berlin

15: 1905-1928 (Dec. 26) 1936. Partial Index

Predominance of Female Hormone in Its Action on Hypophysis of Male and Female Castrates Compared to Male Hormone. W. Schoeller, M. Dohrn and W. Hohlweg.—p. 1907.
Microscopic Behavior of Viscera, Particularly the Heart in Exclusion of Vagus Nerve. J. Weiser.—p. 1908.
*Simple Demonstration of Lactic Acid in Gastric Contents. H. E. Never and E. Vincke.—p. 1910.
Enzymes of Pleural Exudates. C. Cattaneo and G. Scoz.—p. 1912.
Agranulocytosis Caused by Medicaments. E. von Baeyer.—p. 1914.
*New Therapeutic Method of Essential Hypertention and of Related Conditions. H. Rutenbeck.—p. 1920.

Lactic Acid in Gastric Contents.—After demonstrating that Uffelmann's reaction is not a specific test for lactic acid, Never and Vincke point out that Denigès's color reaction is specific: they adapted it for the examination of the gastric contents. After several trials they found the following procedure the most suitable: First they determine the reaction of the gastric contents. If it is acid, it is used as such for the test; if it is not, it is acidified with a few drops of tenth normal hydrochloric acid. From 5 to 10 cc. of the gastric contents is boiled and then filtrated. The filtrate is rendered slightly alkaline by the addition of a 10 per cent solution of sodium carbonate. Then five drops of tenth normal solution of potassium permanganate is added for each cubic centimeter of filtrate. This mixture is brought once more to the boiling point until the forming manganese dioxide has completely precipitated. After filtration, 2 cc. of concentrated sulfuric acid is added to 0.2 cc. of filtrate. This is heated for two minutes in the boiling water bath and, after cooling down, from two to three drops of a 5 per cent alcoholic solution of guaiacol is added. The presence of lactic acid is indicated by a rose to carmine red coloration. In employing this test on patients with various disorders, the authors found that the lactic acid reaction was positive in patients with gastric carcinoma.

New Therapy of Essential Hypertension.—Rutenbeck describes craniocerebral electrophoresis as the new treatment for essential hypertension. He shows that craniocerebral electrophoresis produces a reflex hyperemia of the brain. The substance he uses is a choline derivative and the maximum current strength is 1.5 milliamperes. With such low intensities, burns are avoided. The treatments, lasting about one hour each, are repeated every day or every second day. The author employed the method with good results in those cases of essential hypertension in which treatment was required on account of headaches, vertigo and so on, for he does not consider treatment necessary in all cases of hypertension.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

103: 305-362 (Nov.) 1936. Partial Index

Coccygeal Teratoma from Practical and Scientific Point of View. M. Brenner.—p. 305.
Spontaneous Rupture of Symphysis During Pregnancy. H. Hirsch.—p. 314.
*Essential Pregnancy Hypertension as Monosymptomatic Manifestation of Edemonephrotic and Eclamptic Syndrome. G. Gaehtgens.—p. 321.
"Prognostic Index" (Effect Index) in Treatment of Uterine Cancer. O. E. Nudolskaja.—p. 331.

Essential Pregnancy Hypertension.—Gaehtgens points out that in the frequent concurrence of pregnancy nephropathy and increased blood pressure, the latter was generally regarded as merely of symptomatic significance. However, since the various forms of the edemonephrotic and eclamptic syndrome were separated and the monosymptomatic pregnancy toxicoses were recognized, essential pregnancy hypertension was accepted as a manifestation of the toxic processes of pregnancy. The author describes a case history which reveals that in this case of pregnancy toxicosis there existed an elective disturbance of the neurovegetative apparatus. The family anamnesis of this patient revealed a hereditary instability of the neurovegetative system: it seems that in this case the hypertension was caused by a dysfunction of the neurovegetative and perhaps also of endocrine processes, which in turn was traceable partly to hereditary factors and partly to the pregnancy. It cannot be doubted that during pregnancy there occurs a form of hypertension that resembles essential hypertension and is accompanied neither by renal disturbances nor by angiospastic retinitis. It is possible, however, that the essential pregnancy hypertension gradually changes into the renal form with angiospastic retinitis and genuine contracted kidney. The author suggests that this interpretation might help to explain also the development of renal disease after eclampsia.

Monatsschrift für Kinderheilkunde, Berlin

67: 229-378 (Nov. 28) 1936. Partial Index

Contribution to Problem of Sympathetic Regulation of Red Blood Picture. H. Kinkel and Gertrud Diercks.—p. 229.
*Modification of Anaphylactic Shock of Guinea-Pigs by Vitamin C. H. Lemke.—p. 244.
*Meningeal Reaction in Erythema Nodosum. D. von Moritz.—p. 255.
Obesity During Childhood and Its Prognosis with Especial Consideration of Question of Adiposogenital Dystrophy. Margarete Bornhardt. —p. 270.
Creatine Metabolism in Pubertas Praecox. Irmgard Scharff.—p. 273.
Acute Cutaneous Inflammations of the New-Born. E. Flusser.—p. 279.

Modification of Anaphylactic Shock by Vitamin C.—Clinical observations demonstrated to Lemke a greatly reduced incidence of serum disease in children who were constantly treated with vitamin C. In order to clarify the connections he resorted to animal experiments and found that the daily administration of cevitamic acid to guinea-pigs sensitized with horse or sheep serum resulted in the survival of animals following the reinjection of a dose several times as large as the otherwise fatal one. This effect increased proportionately to the quantity of the administered vitamin C. Sensitization as well as shock could be inhibited by a single parenteral injection of cevitamic acid thirty minutes before the sensitization or the reinjection, respectively. Tests that were made to exclude a nonspecific acid or reductive action disclosed that the observed effect is specific for cevitamic acid.

Meningeal Reaction in Erythema Nodosum.—According to von Moritz, the etiology of erythema nodosum is not entirely cleared up, for, whereas some assume a special as yet unknown agent, others think that it is of tubercuious origin and represents a form of subcutaneous tuberculid and still others consider it an allergic or a parallergic skin reaction usually on the basis of a tuberculous allergy. The author thinks that, regard-

less of whether the one or the other opinion is accepted, it is certain that erythema nodosum is not a local skin disorder but rather a partial manifestation of a general reaction of the organism. The general symptoms such as fever, headaches, loss of appetite and severe depression, which accompany the erythema nodules, corroborate this. The reaction capacity of the skin and of the entire organism is changed. The blood sedimentation is accelerated; there is leukocytosis and a slight deviation to the left. Roentgenoscopy reveals in some cases perihilar infiltration. The observation of meningeal symptoms in a case of localized erythema nodosum induced the author to give especial attention to the meningeal symptoms and to resort to the chemical examination of the spinal fluid. He studied the spinal fluid in ten cases. A tabular report of the results indicates that the pressure of the fluid was increased, probably as the result of an increase in the quantity of the fluid. The author thinks that in the examined cases the meningitis reaction as well as the erythema nodules and the perihilar infiltrations were all manifestations of an allergic reaction. Intracutaneous tests with increasing doses of tuberculin in three of five tuberculous children resulted in meningeal symptoms, which disappeared again after a few days or a week. In these cases too the examination of the cerebrospinal fluid revealed increased pressure but no other pathologic changes. The author thinks that the meningeal symptoms were of tuberculotoxic or allergic origin, in that the allergy of the organism was suddenly increased in response to the intracutaneous injection of tuberculin. He evaluates the significance of these observations in connection with tuberculous meningitis and points out that the anamnesis frequently reveals an erythema nodosum in cases of tuberculous meningitis.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

114: 1-124 (Dec. 4) 1936. Partial Index

Histologic After-Examinations in Leukoplakia. J. P. Emmrich.—p. 1.
Histologic Diagnosis and Prognosis of Neoplasms of Mammary Gland. H. Limburg.—p. 7.
Amount of Posterior Pituitary Hormone in Hypophysis of Women with Eclampsia. W. Bickenbach.—p. 29.
*Elimination of Hypophyseally Formed Gonadotropic Hormone During Normal Pregnancy and During Pregnancy Toxicoses. K. J. Anselmino and F. Hoffmann.—p. 52.
Adhesiveness of Living Leukocytes of the New-Born. E. Junghans.—p. 62.
*Etiology of Rupture of Liver in the New-Born. F. J. Schmitt.—p. 70.
*Treatment of Fractures of Upper Arm in the New-Born. F. A. Wahl.—p. 82.

Elimination of Gonadotropic Hormone Formed in Hypophysis.—Anselmino and Hoffmann point out that the assumption of the placental origin of the gonadotropic substances in the blood and urine of pregnant women has found wider acceptance in recent years. However, a number of authors have also called attention to the different gonadotropic action of prehypophyseal preparations and of the extracts of pregnancy urine. The authors say that, although it cannot be doubted that the gonadotropic substances which appear in such large quantities in the blood and urine of pregnant women are of placental origin, a number of investigations indicate that the pregnancy urine eliminates also gonadotropic hormones that have been formed in the hypophysis. The authors describe their own investigations on the gonadotropic hormone of hypophyseal origin in the urine during normal pregnancy, during hyperemesis gravidarum and during eclampsia. They show that with the method of Evans and his collaborators it is possible to demonstrate in the urine of a number of women during the early part of pregnancy small amounts of gonadotropic hormone that has been formed in the hypophysis. This observation demonstrates the contradictory results of the action of gonadotropic substance on hypophysectomized animals. In patients with hyperemesis gravidarum, gonadotropic hormones of hypophyseal origin appear in the urine regularly in increased quantities, whereas in the urine of eclamptic patients the hypophyseal gonadotropic hormones cannot be demonstrated. The authors reach the conclusion that the blood and urine of patients with hyperemesis or with eclampsia contain unphysiologically large quantities of gonadotropic substances, which in the patients with hyperemesis are mostly, and in those with eclampsia exclusively, of placental origin.

Rupture of Liver in the New-Born.—After pointing out that hepatic rupture is a comparatively rare birth injury, Schmitt reviews the literature on this problem, particularly the report of Hedrén, who maintained that the parenchymatous ruptures should be differentiated from the subcapsular hepatic hemorrhages. In the true ruptures the parenchyma is injured, whereas the subcapsular hemorrhages signify tearing of the hepatic capsule. In the case reported by Hedrén, the injury of the hepatic parenchyma developed in a spontaneous delivery, a possibility that had been denied by Kratter. In discussing the causes of subcapsular hemorrhages as well as of the parenchymatous injuries, the author again cites Hedrén, who believed that the pressure exerted during delivery on the right costal arch and on the abdominal wall might play a part but in addition to this there must be other factors, such as an overfilling of the liver with blood as the result of asphyxia. The author reviews reports of other authors. He cites Genell, who reports the history of a woman with obliquely contracted pelvis, who twice gave spontaneous birth to apparently mature and healthy infants, but each time the child died as the result of hepatic rupture. After reviewing several other reports, the author describes three cases that were observed at his clinic and prove that hepatic rupture and subcapsular hepatic hemorrhages may develop in spontaneous and in artificially terminated delivery. The true ruptures are the rarer forms of injury. Some authors recommend suture, while others consider treatment useless.

Treatment of Fractures of Humerus in the New-Born.—Wahl shows that Spitzy's "high back splint," which, like the "low back splint" (which is used for fractures of the clavicle), is designated also as "transverse back splint," causes a severe torsion of the distal end of the fracture of the humerus and effects curative results that are undesirable from the anatomic as well as from the functional point of view. In the two cases the author gives clinical and roentgenologic proofs of a severe peripheral dislocation of almost 90 degrees rotation. On the basis of these unfavorable experiences and of theoretical analysis he reaches the conclusion that Spitzy's "high back splint" should not be applied for the treatment of fractures of the humerus in the new-born. He advises that in fractures of the shaft of the humerus as well as in case of detachment of the proximal epiphysis the attachment of Desault's bandage should be preceded by the application of a splint consisting of a narrow strip of aluminum, which is bent in such a manner that it can be placed from the back and the outside on the padded arm. At the level of the fracture the strip should be bent anteriorly and inward, so that the convexity of the strip will counteract the rotation.

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60: 3009-3056 (Dec. 19) 1936. Partial Index

*Action of Eclampsia Serum in Allergy Experiment. E. Junghans.—p. 3010.
*Difficulty of Shoulder Delivery in Large Children and Suggestion for Counteracting Them. H. Tüscher.—p. 3012.
Significance of Menarche for Occurrence of Obstetric Complications. D. Risopoulos.—p. 3016.
Chorionepithelioma as Cause of Life Threatening Internal Hemorrhage. O. Burmester.—p. 3021.
Experiences with New Remedies in Therapy of Leukorrhea. K. Zinram.—p. 3022.
Trichomonas Cervicitis as Manifestation of Trichomoniasis. M. Rodecurt.—p. 3028.

Action of Eclampsia Serum in Allergy Experiment.—According to Junghans, Knepper succeeded in producing the characteristic eclamptic changes in the liver and kidneys of rabbits by the simultaneous injection of horse serum and of solution of posterior pituitary. His own experiments were undertaken in order to examine the action of eclampsia serum in the allergy experiment on pregnant animals. Studies of other investigators had revealed that a single injection of eclampsia serum produces no anatomic changes in the organs. The author injected subcutaneously into pregnant rabbits 2 cc. of sterile, inactivated serum from eclamptic women, repeating this procedure at intervals of five or six days. Beginning about three weeks after the first subcutaneous injection, the animals were given repeated serum injections into the vein of the ear. Some of the animals developed anaphylactic shock from which they recovered. At the end of the pregnancy the animals were

killed and the histologic studies revealed that the allergy experiment by means of eclampsia serum produces in the liver and kidneys of pregnant rabbits anatomic changes indicating a hyperergic reaction. The morphologic pictures greatly resemble those of eclampsia.

Delivery of Shoulders in Large Children.—Tüscher describes a case in which he encountered difficulties in the delivery of the shoulders. He says that, if the abnormal presentation of the breadth of the shoulders at the pelvic inlet is the cause of the difficulty, the fetal head, following its external rotation backward, should be directed downward toward the perineum, for by this maneuver a correct presentation of the shoulders can often be effected. If in case of correct presentation the difficulty lies only in the excessive size of the shoulders, it is again advisable first to make an attempt to deliver the shoulders by bringing the head downward. This mechanism is further promoted by pressure on the fundus and if necessary by slight traction on the fetal body in the direction toward the perineum. If these attempts at extraction should fail to succeed and the downward pulling of an arm should no longer prove feasible, the author recommends that the extraction efforts on the head should not be further continued, but a rotation of the shoulders should be resorted to by first loosening the shoulder girdle slightly and then making screw-like movements.

Problemy Tuberkuleza, Moscow

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Chronic Tuberculosis of Subarachnoid Space. M. A. Zakharchenko.—p. 1477.
*Development of Peritoneum and Treatment of Tuberculous Peritonitis. L. N. Zhmakin.—p. 1483.
*Rational Therapy of Tuberculosis. I. A. Golyanitskiy.—p. 1493.
Local Application of Koch's Tuberculin in Diagnosis and Treatment of Tuberculosis of the Eye. M. M. Baltin.—p. 1499.
Selective Upper Thoracoplasty. N. V. Antelava.—p. 1506.
Tuberculosis of Bronchial Lymph Nodes in Children. E. E. Granat.—p. 1517.

Treatment of Tuberculous Peritonitis.—According to Zhmakin, the course of tuberculous peritonitis in children differs considerably from that in adults. In children tuberculous peritonitis more frequently runs a mild latent course. A clinical cure may be obtained in a few months. Tuberculous peritonitis in adults pursues a more chronic course. Protracted, recurring forms, lasting ten and more years are frequently observed. Absorption of the exudate and of solid tuberculous nodes is slow and not infrequently remains arrested at some stage. Metastatic processes are observed in adults much more frequently than in children. Laparotomy performed during the acute stage of the disease is likely to give rise to metastatic phenomena and activation of the process. Laparotomy is seldom indicated in tuberculous peritonitis of children. It is of value in adults when latency of the process is unduly protracted. The Spa-Sanatorium treatment of tuberculous peritonitis in Eupatoria (Crimea) gives excellent results in both children and adults, the children, as a rule, making a more complete and quicker recovery. The spa treatment is contraindicated in the stenosing forms of tuberculous peritonitis as well as in cases with marked debility, high fever and an active process in the lungs.

Rational Therapy of Tuberculosis.—According to Golyanitskiy, most authors believe that in tuberculous infection allergy is not definitely related to immunity. Allergy here cannot be regarded as an immunity reaction. The fate of a tuberculous patient depends on the natural defense mechanisms. Immunity does not play the determining part in the cure. Local regenerative processes of the connective tissue play an important part in the natural immunity. The tubercle itself represents a typical regenerative process. In the presence of normal regenerative power of the organism the tubercle is converted into a scar and the infection is thus terminated. When the regenerative power is insufficient or the virulence too great, the tuberculous lesions develop into an exudative or caseating form. The author concludes that treatment of tuberculosis depends on the restoration of the normal regenerative processes. This in turn depends on normal nutrition of the affected tissues and on their normal oxidation. In his treatment of bone and joint tuberculosis the author reduces the foregoing to restoring (1) the blood to normal, (2) the acid-base balance, (3) the normal mineral metabolism and (4) the normal vitamin balance. The first condition is best accomplished by transfusion of small doses (from 100 to 150 cc.) of freshly conserved blood, by transfusion of small amounts (from 15 to 20 cc.) of incompatible blood or by autohemotherapy (5 cc.). An effective therapy of altered acid-base balance consists in the increase of gaseous exchange. This is best met by life outdoors. Alterations in the mineral balance are determined by roentgenologic examination of the bones and by determinations of the blood calcium. Decalcification is treated by intravenous introduction of from 5 to 10 cc. of calcium chloride every other day and drinking adequate amounts of milk. The general hypovitaminosis, as reflected in the deficiency of vitamin C, is made up by the feeding of carotene, carrots, yeast, cod liver oil and so on. On this regimen, in conjunction with the general adequate nutrition and local orthopedic procedures, positive results are obtained in a much shorter time.

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10: 321-376 (No. 4) 1936

From Childhood Infection to Adult Type of Pulmonary Tuberculosis. A. Wallgren.—p. 321.
Attempts to Treat Tuberculous Cutaneous Disorders with Lecithin Tuberculin. K. Hedén.—p. 340.
Endogen Factors in Occurrence of Erythema Nodosum. A. Roosvall.—p. 351.
*Pulmonary Tuberculosis Caused by Bovine Type of Tubercle Bacillus: Thirty-Three Cases. P. Mourier.—p. 356.
*Glutathionemia in Tuberculosis of Bones. M. M. Altschuler.—p. 370.

Pulmonary Tuberculosis Caused by Bovine Bacillus.—Mourier reports about thirty-three cases of pulmonary tuberculosis that were caused by the bovine type of tubercle bacillus, the type identification having been made in the state serum institute. Of the thirty-three patients twenty-five had been in direct contact with cattle, and of the other eight only three apparently had had no connection with farming. Thirty of the patients admitted that they had taken raw milk, but three could not state that with certainty. In ten of the patients the anamnesis revealed the familial occurrence of tuberculosis; however, in most of these cases there had been no contact with the diseased members of the family. In one case there was considerable evidence that the bovine infection had been spread from man to man in the hospital. Transmission of the infection from cattle to man seemed probable in twenty-nine of the patients. The author gained the impression that the clinical aspects, the course and the prognosis of the pulmonary tuberculosis of bovine origin do not differ from those caused by the human type of tubercle bacillus.

Glutathionemia in Tuberculosis of Bones.—Altschuler, after reviewing the literature on glutathione, reports his own investigations on the glutathione content of the blood of children with tuberculosis of the bones and joints. He found that the total amount of glutathione increases in the closed and open forms of tuberculosis of the bones and joints. The more severe the process, the higher are the glutathione values in the blood. In the closed form of tuberculosis of the bones and joints, the reduced form of glutathione shows a decrease in the venous blood if the process becomes more severe. The quantity of oxidized glutathione increases in these cases absolutely as well as in relation to the reduced form. In open tuberculosis of the bones and joints the increase of the oxidized glutathione in the venous blood is less severe. The glutathione coefficient is increased in tuberculosis of the bones and joints and, as the process exacerbates, the increase becomes even more pronounced. The author concludes that, besides the clinical picture, the fluctuations in the glutathione content of the blood permit an estimation of the course of the tuberculous process in the bones and joints.

CORRECTION

Cardiac Asthma.—In the abstract of Weinberger's article in THE JOURNAL, January 30, page 433, the dosage of morphine and atropine to be injected should be from 1 to 2 cg. of morphine, to which from 0.5 to 1 mg. of atropine has been added.